
Chapter 9



Toxics Release Inventory Data for Rubber and Plastics Products (SIC Code 30)

A Look at the Rubber and Miscellaneous Plastics Products Industry (SIC Code 30)

The rubber and plastics products industry (SIC code 30) manufactures miscellaneous products from natural, synthetic, or reclaimed rubber or from plastics resins. Box 9-1 lists Standard Industrial Classification (SIC) codes and their designations for this sector. In TRI, SIC codes are given as reported by the facilities; these may differ from information in economic and other data collections.

Manufacturing activity in this sector is closely related to work performed in other industrial sectors. Plastics materials (resins) and synthetic rubbers, which are important raw materials for this sector, are classified as chemical products in SIC code 28. Many products made of rubber and plastics, from boats to buttons, are classified elsewhere, based on the type of object or end use rather than the material from which they are made. This sector, SIC code 30, covers some types of rubber and plastics products with end uses—for

example, tires, plastic bottles, and numerous other products made from both kinds of materials. It also makes semi-finished plastics (in the group designated by SIC code 308)—shaped plastics (rods or tubes, for example) or plastics plate or sheet—that are used in manufacturing other products. Plants that produce both the resins and the plastics sheet or shapes are categorized in this sector (in SIC code 308). Most miscellaneous rubber products (SIC code 306) are used by other sectors such as automobile manufacturing and service industries like hospitals.

Manufacturers in the rubber and plastics products sector produced shipments valued at \$150.47 billion in 1996, up from \$145.74 billion in 1995 (both in current dollars). Employment in this sector has steadily increased over the last decade and was just over 1.0 million in both years. The rubber and plastics products sector has seen rapid growth in the 1990s. Only electrical equipment (SIC code 36), which includes computer components such as circuit boards, and industrial machinery (SIC code 35) expanded more rapidly. Rubber and plastics products manufacturing increased by one third from 1989 to 1996, nearly twice the U.S. average for all manufacturing (see Chapter 1, Table 1-10).



Chapter 9 — TRI Data for Rubber and Plastics Products

Box 9-1. SIC Code 30, Rubber and Miscellaneous Plastics Products: Codes and Classifications

SIC Code	Industry Description
301 Tires and Inner Tubes	
3011 Tires and Inner Tubes	Manufacture of pneumatic casings, inner tubes, and solid and cushion tires; tiring (in continuous lengths); camelback for retreading, and tire repair and retreading materials.
302 Rubber and Plastics Footwear	
3021 Rubber and Plastics Footwear	Manufacture of fabric upper footwear with rubber or plastics soles, and rubber and plastics protective footwear.
305 Gaskets, Packing, and Sealing Devices and Rubber and Plastics Hose and Belting	
3052 Rubber and Plastics Hose and Belting	Manufacture of rubber and plastics hose and belting, including garden hose.
3053 Gaskets, Packing, and Sealing Devices	Manufacture of gaskets, gasketing materials, compression packings, mold packings, oil seals, and mechanical seals. Includes devices made of leather, rubber, metal, asbestos, and plastics.
306 Fabricated Rubber Products, nec*	
3061 Molded, Extruded, and Lathe-Cut Mechanical Rubber Goods	Manufacture of molded, extruded, and lathe-cut mechanical rubber goods (generally parts for machinery and equipment).
3069 Fabricated Rubber Products, nec*	Manufacture of industrial rubber goods, rubberized fabrics, vulcanized rubber clothing, and miscellaneous rubber specialties and sundries. (Establishments primarily engage in reclaiming rubber and rubber products.)
308 Miscellaneous Plastics Products	
3081 Unsupported Plastics Film and Sheet	Manufacture of unsupported plastics film and sheet, including cellulosic plastics, polyester, polyethylene, polypropylene, polyvinyl, vinyl, and vinyl copolymer film and sheet, and photographic, micrographic, and X-ray plastics sheet and film.
3082 Unsupported Plastics Profile Shapes	Manufacture of unsupported plastics profiles, rods, tubes, and other shapes.
3083 Laminated Plastics Plate, Sheet, and Profile Shapes	Manufacture of laminated plastics plate, sheet, profiles, rods, and tubes.
3084 Plastics Pipe	Manufacture of plastics pipe.
3085 Plastics Bottles	Manufacture of plastics bottles.
3086 Plastics Foam Products	Manufacture of plastics foam products, including cups, cushions, portable ice chests or coolers, insulation and cushioning, packaging, plates, and shipping pads.
3087 Custom Compounding of Purchased Plastics Resins	Custom compounding of purchased plastics resins.
3088 Plastics Plumbing Fixtures	Manufacture of plastics plumbing fixtures.
3089 Plastics Products, nec*	Manufacture of miscellaneous plastics products.

*nec: not elsewhere classified; these are generally referred to as "miscellaneous" products in their categories.

Sources

Executive Office of the President, Office of Management and Budget, *Standard Industrial Classification Manual, 1987*: Standard Industrial Classification (SIC) codes and industry descriptions.

U.S. *Industry & Trade Outlook '98*, DRI/McGraw Hill, Standard & Poor's, and U.S. Department of Commerce, International Trade Administration, 1998: economic analyses, also provides some information on environment and industrial processes for selected industries.

U.S. Census Bureau, *1996 Annual Survey of Manufactures: Statistics for Industry Groups and Industries*, M96(AS)-1, February 1998 <<http://www.census.gov/prod/www/titles.html#mm>>: value of shipments and employment. Supplemental data from U.S. Census Bureau <<http://www.census.gov>> for some industries.

U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance, Office of Compliance, *Profile of the Rubber and Plastics Industry*, Sector Notebook project, EPA/310-R-95-016, September 1995 <<http://es.epa.gov/oeca/sector/index.html>>: industry processes and technologies, pollutant sources, and selected economic data.



In 1996, miscellaneous plastics production (SIC code 308, at the three-digit SIC code level) represented three-quarters of the sector's shipments, \$112.62 billion, and three-quarters of the sector's employment, 763,000 employees. Among the industries producing rubber products, two—tires and inner tubes (SIC code 301) and miscellaneous fabricated rubber products (SIC 306)—each contributed more than \$14 billion in shipments. Employment in the miscellaneous fabricated rubber products industry (122,000) was about double that of the tire producers (65,000).

Plastics Products

Steps in making products out of plastics materials vary. Generally, resins in the form of pellets, granules, powders, sheets, fluids, or “preforms” are molded into shapes or parts. Additives are common and are used to influence characteristics such as plasticity and brittleness, color, electrical conductivity (to reduce electrostatic charges), stability against the effects of heat or oxidation, and others. Some plants use plastics pellets already containing such additives, while others add them on-site. Molding processes include injection, extrusion, blow molding, thermoforming, rotational molding, compression molding, casting, and calendaring (squeezing or pressing). Foam plastics undergo similar processes, but chemical blowing agents, air, pressurized gases, or liquids that boil at low temperatures are added to create the cellular foam structures.

Generally, in the manufacture of plastics products, solvent cleaning and finishing processes contribute the bulk of the emissions of toxic substances to air. Additives, including metals such as cadmium and lead, may also be released during mixing or, under conditions of high heat or pressure, in the molding process. Plastics mixing processes are also a source of styrene releases.

Rubber Products

Common processes in the manufacture of rubber products begin with mixing, which covers both mixing of polymers (raw and/or synthetic rubber), carbon black (filler), oils, and miscellaneous chemical aids or agents, and forming the rubber into preliminary sheets. Some plants purchase already mixed uncured rubber. Further steps in the process include milling the sheets in preparation for further processing; extruding and calendaring (squeezing through a press) into various shapes or thin sheets; building the rubber with reinforcing materials (wire, polyester, etc.) with or without adhesives; vulcanizing (or curing); and finishing by grinding, printing, washing, buffing, and other techniques.

In the manufacture of rubber, air emissions of toxic chemicals occur primarily during preparation of mixing components and the building phase when reinforcing materials are added. Metals are common ingredients of the mixture, notably zinc compounds used as a processing aid, accelerator, activator, and/or age resistor.

1996 TRI Data for Rubber and Plastics Products

Table 9-1 summarizes TRI reporting by the rubber and plastics products sector for 1996. A total of 3,747 forms were submitted in this sector. Of these, 9.2% were Form A certification statements, certifying that a facility's total annual reportable amount of a TRI chemical was less than 500 pounds for the year and that the facility did not manufacture, process, or otherwise use more than 1 million pounds. (The Form A certification statement is explained in Chapter 1.)



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-1. Summary of TRI Information by 4-digit SIC Code, 1996: Rubber and Plastics Products, SIC Code 30

Total On- and Off-site Releases Rank	Total Production-related Waste Rank	SIC Code	Industry	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds
7	8	3011	Tires & Inner Tubes	66	205	5	2,407,553	2,577,771	4,985,324
14	14	3021	Rubber & Plastics Footwear	8	31	0	862,298	32,454	894,752
9	1	3052	Rubber & Plastics Hose & Belting	57	129	0	2,421,054	1,103,615	3,524,669
10	10	3053	Gaskets, Packing & Sealing Devices	36	79	11	1,755,563	112,935	1,868,498
13	12	3061	Mechanical Rubber Goods	41	102	7	859,124	140,274	999,398
3	5	3069	Fabricated Rubber Products, nec*	233	476	27	7,526,188	1,804,432	9,330,620
8	3	3081	Unsupported Plastics Film & Sheet	59	160	20	4,401,792	62,365	4,464,157
15	15	3082	Unsupported Plastics Profile Shapes	28	41	8	224,329	21,317	245,646
5	7	3083	Laminated Plastics Plate & Sheet	43	110	2	7,049,707	6,707	7,056,414
16	16	3084	Plastics Pipe	10	15	3	168,265	0	168,265
17	17	3085	Plastics Bottles	6	6	2	295	0	295
2	4	3086	Plastics Foam Products	248	521	46	30,821,332	462,972	31,284,304
12	13	3087	Custom Compound Purchased Resins	141	361	89	609,229	480,614	1,089,843
4	9	3088	Plastics Plumbing Fixtures	137	164	3	7,939,095	29,880	7,968,975
1	2	3089	Plastics Products, nec*	547	952	75	31,987,488	2,564,966	34,552,454
6	6		Multiple within SIC Code 30	114	321	40	5,576,293	1,183,557	6,759,850
11	11		Invalid SIC Code within SIC Code 30	50	74	5	1,182,000	33,827	1,215,827
			Total for SIC Code 30	1,824	3,747	343	105,791,605	10,617,686	116,409,291

Note: **On-site Releases** from Section 5 of Form R. **On-site Waste Management** from Section 8 of Form R. **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Total Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. **Total Production-related Waste** sums Section 8 (Current Year, Column B) of Form R, except: **Non-production-related Waste** (remedial/catastrophic incidents). Facilities/forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.

One quarter of all forms in this sector (952 forms) were submitted in the miscellaneous plastics products industry (SIC code 3089). Another 521 came from the plastics foam products industry (SIC code 3086), and 476 from miscellaneous fabricated rubber products (SIC code 3069). Together, these three industries represented more than half of all forms in the sector.

These were also the top industries for on- and off-site releases in this sector, which totaled 116.4 million pounds, as shown in Table 9-1.

Miscellaneous plastics products ranked first, with 34.6 million pounds of total releases, followed by plastics foam products with 31.3 million pounds. In both cases, the great majority of the releases were reported on-site. No other industry in this sector totaled more than 10 million pounds in on- and off-site releases. Miscellaneous fabricated rubber products, which ranked third, had 9.3 million pounds. The same two industries that had the

largest total releases also had the largest amounts of on-site releases, but plastics plumbing fixtures (SIC code 3088) was third (with 7.9 million pounds) in this category.

Tires and inner tubes (SIC code 3011) accounted for the largest off-site releases (transfers to disposal) with 2.58 million pounds, closely followed by miscellaneous plastics products (SIC code 3089) with 2.56 million pounds.

Miscellaneous fabricated rubber products (SIC code 3069) was third with 1.8 million pounds.

For the most part, industries with large quantities of production-related waste were different from those with the largest releases. Production-related waste in this sector totaled 369.8 million pounds in 1996. The rubber and plastics hose and belting industry (SIC code 3052) reported the largest amount, 97.8 million pounds. Miscellaneous plastics products (SIC code 3089) was second with 72.9 million



Table 9-1. Summary of TRI Information by 4-digit SIC Code, 1996: Rubber and Plastics Products, SIC Code 30, Continued

SIC Code	Industry	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
3011	Tires & Inner Tubes	2,991,544	1,675,820	9,668,342	0
3021	Rubber & Plastics Footwear	9,482	45,217	977,685	0
3052	Rubber & Plastics Hose & Belting	92,708,038	1,515,450	97,791,468	614
3053	Gaskets, Packing & Sealing Devices	2,857,008	717,424	5,242,928	7,012
3061	Mechanical Rubber Goods	228,399	892,040	2,076,226	1,532
3069	Fabricated Rubber Products, nec*	14,411,993	2,358,314	26,686,362	6,755
3081	Unsupported Plastics Film & Sheet	36,236,347	2,566,711	50,511,044	3,070
3082	Unsupported Plastics Profile Shapes	211,671	296,950	696,319	110
3083	Laminated Plastics Plate & Sheet	11,469,430	2,309,314	20,751,598	1,300
3084	Plastics Pipe	162,488	28,344	339,504	0
3085	Plastics Bottles	3,004	0	3,094	0
3086	Plastics Foam Products	16,805,912	1,417,909	49,201,648	85,257
3087	Custom Compound Purchased Resins	500,218	363,209	1,881,639	16,650
3088	Plastics Plumbing Fixtures	9	32,880	7,367,415	2,511
3089	Plastics Products, nec*	30,597,303	6,161,857	72,902,282	531
	Multiple within SIC Code 30	10,838,269	3,937,953	21,446,604	5,900
	Invalid SIC Code within SIC Code 30	666,011	333,324	2,246,104	0
	Total for SIC Code 30	220,697,126	24,652,716	369,790,262	131,242

Note: **On-site Releases** from Section 5 of Form R. **On-site Waste Management** from Section 8 of Form R. **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Total Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. **Total Production-related Waste** sums Section 8 (Current Year, Column B) of Form R, except: **Non-production-related Waste** (remedial/catastrophic incidents). Facilities/forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

*nec: not elsewhere classified.

pounds, and unsupported plastics film and sheet (SIC code 3081) was third with 50.5 million pounds. Although miscellaneous plastics also ranked high for releases (ranking first), the first and third industries for total production-related waste were ninth and eighth, respectively, for releases.

The same three industries reported the largest other on-site waste management quantities: rubber and plastics hose and belting with 92.7 million pounds, unsupported plastics film and sheet second with 36.2 million pounds, and miscellaneous plastics products third with 30.6 million pounds. Altogether, other on-site waste management totaled 220.7 million pounds in SIC code 30.

One facility in the rubber and plastics hose and belting industry (SIC code 3052) accounted for a great majority of the sector’s on-site recycling, reporting 89.2 million pounds for lead compounds in 1996. This large amount similarly influenced the sector’s data for on-site waste management and

total production-related waste. This facility has made a substantial reduction in its on-site recycling of this chemical since 1995, described in “Facilities with Large Increases and Decreases in Waste Management, 1991-1996” later in this chapter.

Miscellaneous plastics products (SIC code 3089) reported 6.2 million pounds of transfers off-site for further waste management, out of 24.7 million pounds for the sector. This was the only category in which facilities that reported more than one SIC code in SIC code 30 to describe their manufacturing activities ranked high. TRI forms in this “multiple-code” category, explained below, were second for transfers off-site for further waste management with 3.9 million pounds. Unsupported plastics film and sheet (SIC code 3081) was third with 2.6 million pounds.



Multiple SIC Codes in SIC Code 30

Some facilities in the rubber and plastics products sector manufacture products in similar but distinct categories, as designated in the Standard Industrial Classification (SIC) scheme. For example, a facility may manufacture both rubber and plastics hose and belting (SIC code 3052) and miscellaneous fabricated rubber products (SIC code 3069).

Another facility may produce plastics foam products (SIC code 3086) and miscellaneous plastics products (SIC code 3089). Such facilities may report multiple SIC codes on their TRI forms to describe their operations. (Box 1-5 in Chapter 1 further explains reporting of multiple SIC codes and its affect on the analyses presented in the TRI data release.)

In the rubber and plastics products sector, 321 forms were submitted in 1996 with more than one SIC code within SIC code 30, a little less than 10% of the total forms submitted. Table 9-2 examines TRI reporting from these forms. The most frequent combination was custom compounding of purchased resins (SIC code 3087) and miscellaneous plastics products (SIC code 3089), reported on 30 forms. Two combinations appeared on 27 forms each. One such combination was unsupported plastics film and sheet (SIC code 3081) and laminated plastics plate and sheet (SIC code 3083), and the other combined miscellaneous fabricated rubber products (SIC code 3069) and miscellaneous plastics products (SIC code 3089). The combination of miscellaneous fabricated rubber products (SIC code 3069) and custom compounding of purchased resins (SIC code 3087) was reported on 26 forms.

The multiple-forms codes reported total on- and off-site releases of 6.8 million pounds, other on-site waste management of 10.8 million pounds, transfers off-site for further waste management of 3.9 million pounds, and total production-related waste of 21.4 million pounds. Forms reporting gaskets, packing, and sealing devices (SIC code

3053) and mechanical rubber goods (SIC code 3061) reported the largest total on- and off-site releases among multiple-codes groups in SIC code 30, with 1.6 million pounds. Forms reporting both unsupported plastics film and sheet (SIC code 3081) and laminated plastics plate and sheet (SIC code 3083) reported the largest total production-related waste, with 5.9 million pounds. These data are shown in Table 9-2.

On- and Off-site Releases

As shown in Table 9-3, air emissions reported by the rubber and plastics products sector totaled 105.3 million pounds, 90.5% of the sector's releases. More than half the air emissions came from two industries: miscellaneous plastics products (SIC code 3089) with 31.8 million pounds and plastics foam products (SIC code 3086) with 30.8 million pounds. As noted in the discussion of chemicals later in this chapter, the miscellaneous plastics products industry reported air emissions primarily of carbon disulfide and styrene, while the plastics foam industry reported large amounts of air emissions of dichloromethane.

Other types of on-site releases in this sector were much smaller, ranging from 398,000 pounds for land releases (other than RCRA subtitle C landfills) to 750 pounds for underground injection. Off-site releases (transfers to disposal) were 10.6 million. As noted above, tire manufacture (SIC code 3011) and miscellaneous plastics products (SIC code 3089) each reported 2.6 million pounds of such transfers. The bulk of the transfers to disposal by the tire and inner tube industry consisted of zinc compounds (2.3 million pounds). For the miscellaneous plastics products industry, the chemical with the largest transfers to disposal was styrene (2.1 million pounds).



Table 9-2. Multiple SIC Codes, 1996: Rubber and Plastics Products, SIC Code 30

SIC Codes	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
3011 3061 3069	1	0	10	5,000	5,010	8,800	3,150	16,720	0
3011 3069	9	0	285	50,255	50,540	47,993	39,370	130,191	0
3020 3061 3069	1	0	0	0	0	0	0	0	0
3052 3053	4	0	55,107	0	55,107	0	8,127	62,722	0
3052 3053 3061 3069	2	0	146	19,600	19,746	0	5	26,200	0
3052 3061	11	0	166,021	13,939	179,960	55,020	154,767	392,722	0
3052 3069	16	0	30,853	87,166	118,019	5,913	12,398	124,660	0
3052 3069 3061 3089	5	0	1,000	37,270	38,270	18,150	69,460	109,280	0
3052 3081 3087	5	3	491	78,860	79,351	7,403	35	86,778	0
3052 3081 3089	7	7	0	0	0	0	0	0	0
3052 3082	1	0	0	0	0	0	750	2,308	0
3052 3087	7	3	1,010	43,069	44,079	13,741	505	57,290	0
3053 3061	14	0	1,471,720	111,223	1,582,943	2,535,030	84,037	4,206,821	0
3053 3061 3069	9	0	253,170	10,800	263,970	0	123,612	387,512	0
3053 3069	12	0	131,182	43,551	174,733	72,481	58,799	310,730	0
3053 3069 3082 3086 3089	6	0	23,724	0	23,724	0	95,246	118,970	0
3053 3089	1	0	40	4,000	4,040	0	0	4,100	0
3061 3069	7	0	66,409	37,440	103,849	6,700	10,556	121,198	0
3061 3069 3089	4	2	500	936	1,436	0	500	1,144	0
3061 3083	1	0	4,931	0	4,931	150,024	250	155,333	0
3061 3086	1	1	0	0	0	0	0	0	0
3061 3089	1	0	0	1,259	1,259	0	0	1,259	0
3069 3079	2	0	28,769	0	28,769	1,080	1,250	31,099	0
3069 3081	2	0	0	2,081	2,081	12,000	0	14,081	0
3069 3087	26	6	26,355	266,030	292,385	0	40,202	329,250	0
3069 3089	27	0	502,960	140,309	643,269	838,854	221,643	1,690,857	0
3079 3088	2	0	10,934	0	10,934	0	0	10,934	0
3081 3082 3083	8	5	0	14,824	14,824	0	0	14,824	0
3081 3082 3083 3084 3086 3087	3	1	0	0	0	0	0	0	0
3081 3083	27	0	1,259,578	18,575	1,278,153	4,062,670	590,777	5,911,819	0
3081 3083 3086	4	2	3,930	2,050	5,980	0	0	6,290	0
3081 3083 3089	1	1	0	0	0	0	0	0	0
3081 3084	1	0	21,945	0	21,945	0	0	22,194	0
3081 3087	5	5	0	0	0	0	0	0	0
3081 3088	5	0	187,951	3,858	191,809	0	88,522	280,331	0
3081 3089	9	0	70,290	5,394	75,684	2,660,800	2,210,162	4,946,656	0
3082 3087	2	0	12,374	11,000	23,374	0	5,815	17,691	0
3082 3087 3089	2	0	28,828	0	28,828	0	0	28,828	0
3082 3089	8	2	106,026	0	106,026	31,400	6,738	130,850	300
3083 3087	3	0	48,267	0	48,267	0	750	48,803	0
3083 3089	4	0	123,300	5,200	128,500	0	20,500	147,200	0
3084 3089	1	0	3,896	0	3,896	0	0	3,896	0
3086 3089	17	2	680,916	0	680,916	100	7,064	691,055	0
3087 3088	1	0	11,345	0	11,345	0	0	11,345	0
3087 3089	30	0	227,914	169,868	397,782	306,410	82,963	777,226	5,600
3088 3087 3089	2	0	8,200	0	8,200	0	0	8,200	0
3088 3089	3	0	5,916	0	5,916	0	0	3,537	0
30 3079	1	0	0	0	0	3,700	0	3,700	0
Total for SIC Code 30	321	40	5,576,293	1,183,557	6,759,850	10,838,269	3,937,953	21,446,604	5,900

Note: On-site Releases from Section 5 of Form R. On-site Waste Management from Section 8 of Form R. Off-site Releases are transfers off-site to disposal from Section 6 of Form R. Total Transfers Off-site for Further Waste Management from Section 6 of Form R. Total Production-related Waste sums Section 8 of Form R, except: Non-production-related Waste (remedial/catastrophic incidents).

Figure 9-1 illustrates the dominant role of air emissions among all releases reported in this sector. Figure 9-2 shows the distribution of on- and off-site releases for the industries (four-digit SIC code) with the sector's largest releases.

Other On-site Waste Management

Recycling was the largest category of other on-site waste management for the rubber and plastics sector in 1996. As shown in Table 9-4 and Figure 9-3,



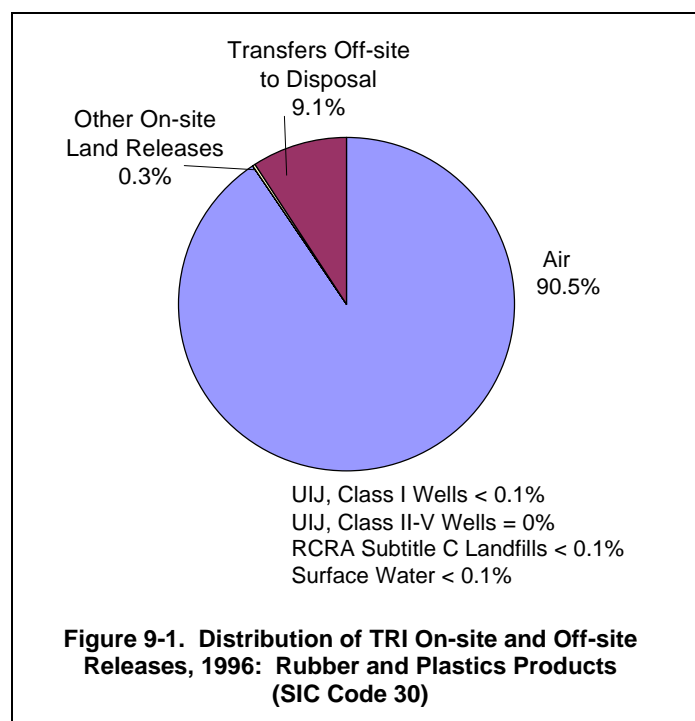
Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-3. TRI On-site and Off-site Releases, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

SIC Code	Industry	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases	Total On- and Off-site Releases Pounds
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds		Transfers Off-site to Disposal Pounds	
3089	Plastics Products, nec*	31,788,725	4,479	0	0	24,819	169,465	31,987,488	2,564,966	34,552,454
3086	Plastics Foam Products	30,803,210	5	0	0	0	18,117	30,821,332	462,972	31,284,304
3069	Fabricated Rubber Products, nec*	7,469,029	4,222	750	0	21,336	30,851	7,526,188	1,804,432	9,330,620
3088	Plastics Plumbing Fixtures	7,939,090	0	0	0	0	5	7,939,095	29,880	7,968,975
3083	Laminated Plastics Plate & Sheet	7,045,193	100	0	0	0	4,414	7,049,707	6,707	7,056,414
	Multiple within SIC Code 30	5,549,123	1,815	0	0	2,763	22,592	5,576,293	1,183,557	6,759,850
3011	Tires & Inner Tubes	2,377,898	10,439	0	0	0	19,216	2,407,553	2,577,771	4,985,324
3081	Unsupported Plastics Film & Sheet	4,399,070	216	0	0	0	2,506	4,401,792	62,365	4,464,157
3052	Rubber & Plastics Hose & Belting	2,380,117	6,020	0	0	0	34,917	2,421,054	1,103,615	3,524,669
3053	Gaskets, Packing & Sealing Devices	1,751,700	18	0	0	0	3,845	1,755,563	112,935	1,868,498
	Invalid SIC Code within SIC Code 30	1,181,998	2	0	0	0	0	1,182,000	33,827	1,215,827
3087	Custom Compound Purchased Resins	574,133	299	0	0	0	34,797	609,229	480,614	1,089,843
3061	Mechanical Rubber Goods	801,424	200	0	0	0	57,500	859,124	140,274	999,398
3021	Rubber & Plastics Footwear	862,298	0	0	0	0	0	862,298	32,454	894,752
3082	Unsupported Plastics Profile Shapes	224,187	0	0	0	0	142	224,329	21,317	245,646
3084	Plastics Pipe	168,265	0	0	0	0	0	168,265	0	168,265
3085	Plastics Bottles	295	0	0	0	0	0	295	0	295
Total for SIC Code 30		105,315,755	27,815	750	0	48,918	398,367	105,791,605	10,617,686	116,409,291

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.



Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. UIJ = underground injection.

on-site recycling totaled 162.1 million pounds, nearly three quarters of the on-site waste management reported. More than half (55.7%) of this amount, 90.3 million pounds, was reported in the rubber and plastics hose and belting industry (SIC code 3052), primarily by one facility as noted above.

Other methods of on-site waste management had considerably smaller amounts. Treatment totaled 39.0 million pounds, led by miscellaneous plastics products (SIC code 3089) with 13.7 million pounds and unsupported plastics film and sheet (SIC code 3081) with 12.9 million pounds. Energy recovery on-site totaled 19.6 million pounds, and half of this amount (10.6 million pounds) was reported by the laminated plastics plate and sheet industry (SIC code 3083).

Figure 9-4 illustrates the distribution of on-site waste management reporting for the top industries in this sector.

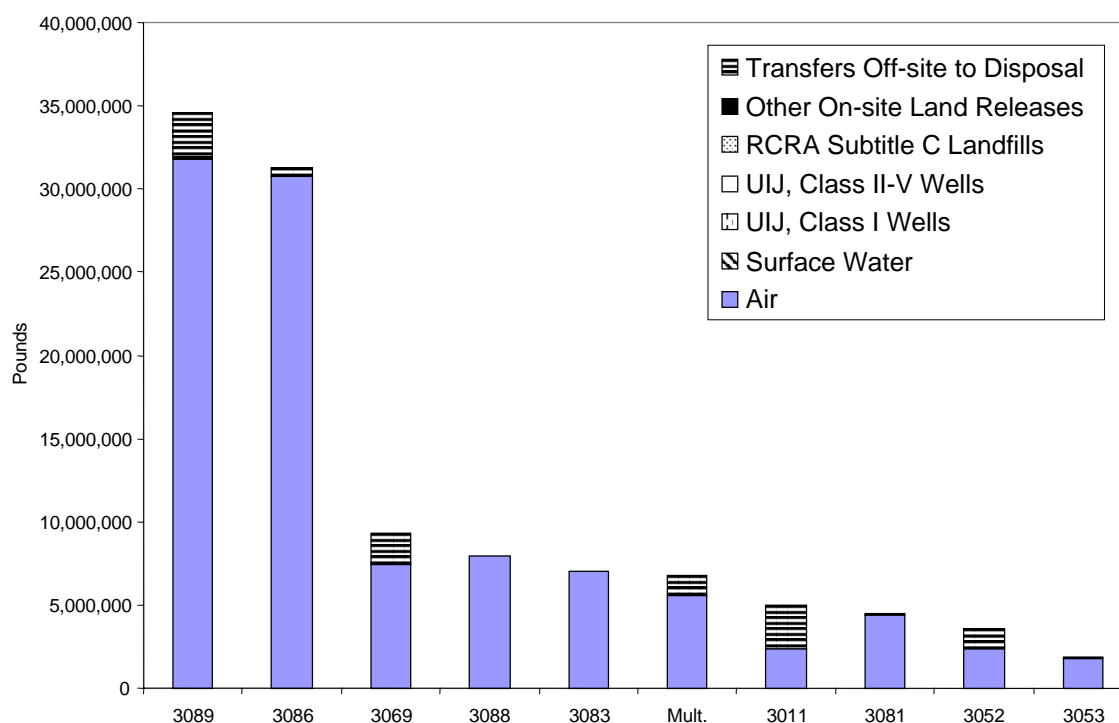


Figure 9-2. TRI On-site and Off-site Releases, SIC Codes with Largest Releases, 1996: Rubber and Plastics Products (SIC Code 30)

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal). UIJ = underground injection. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

Table 9-4. TRI Other On-site Waste Management, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

SIC Code	Industry	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
3052	Rubber & Plastics Hose & Belting	90,279,770	787,943	1,640,325	92,708,038
3081	Unsupported Plastics Film & Sheet	20,224,009	3,153,847	12,858,491	36,236,347
3089	Plastics Products, nec*	14,554,683	2,335,531	13,707,089	30,597,303
3086	Plastics Foam Products	16,044,545	0	761,367	16,805,912
3069	Fabricated Rubber Products, nec*	9,896,971	1,713,342	2,801,680	14,411,993
3083	Laminated Plastics Plate & Sheet	283,746	10,561,479	624,205	11,469,430
	Multiple within SIC Code 30	5,331,123	150,024	5,357,122	10,838,269
3011	Tires & Inner Tubes	2,113,611	720,000	157,933	2,991,544
3053	Gaskets, Packing & Sealing Devices	2,439,515	0	417,493	2,857,008
	Invalid SIC Code within SIC Code 30	60,458	175,977	429,576	666,011
3087	Custom Compound Purchased Resins	479,925	0	20,293	500,218
3061	Mechanical Rubber Goods	209,772	0	18,627	228,399
3082	Unsupported Plastics Profile Shapes	135,030	0	76,641	211,671
3084	Plastics Pipe	0	0	162,488	162,488
3021	Rubber & Plastics Footwear	9,482	0	0	9,482
3085	Plastics Bottles	0	0	3,004	3,004
3088	Plastics Plumbing Fixtures	0	0	9	9
	Total for SIC Code 30	162,062,640	19,598,143	39,036,343	220,697,126

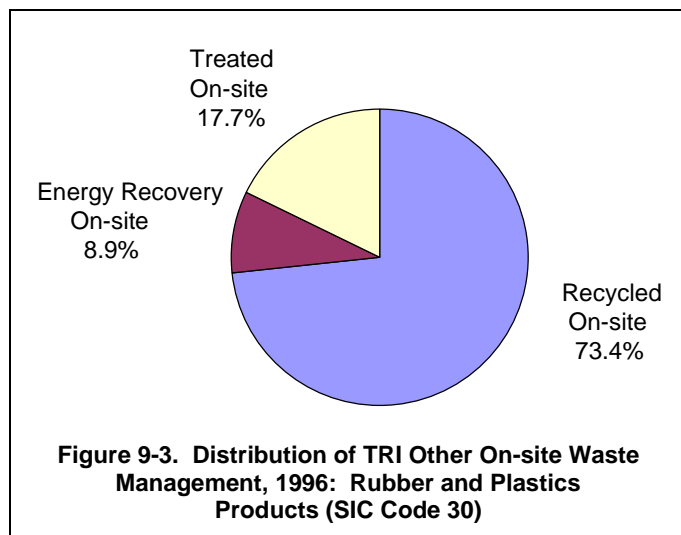
Note: Other On-site Waste Management from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

*nec: not elsewhere classified.



Transfers Off-site for Further Waste Management

Transfers off-site for further waste management of 24.7 million pounds represented a much smaller portion of all reporting in this industry than releases or other on-site waste management. As shown in



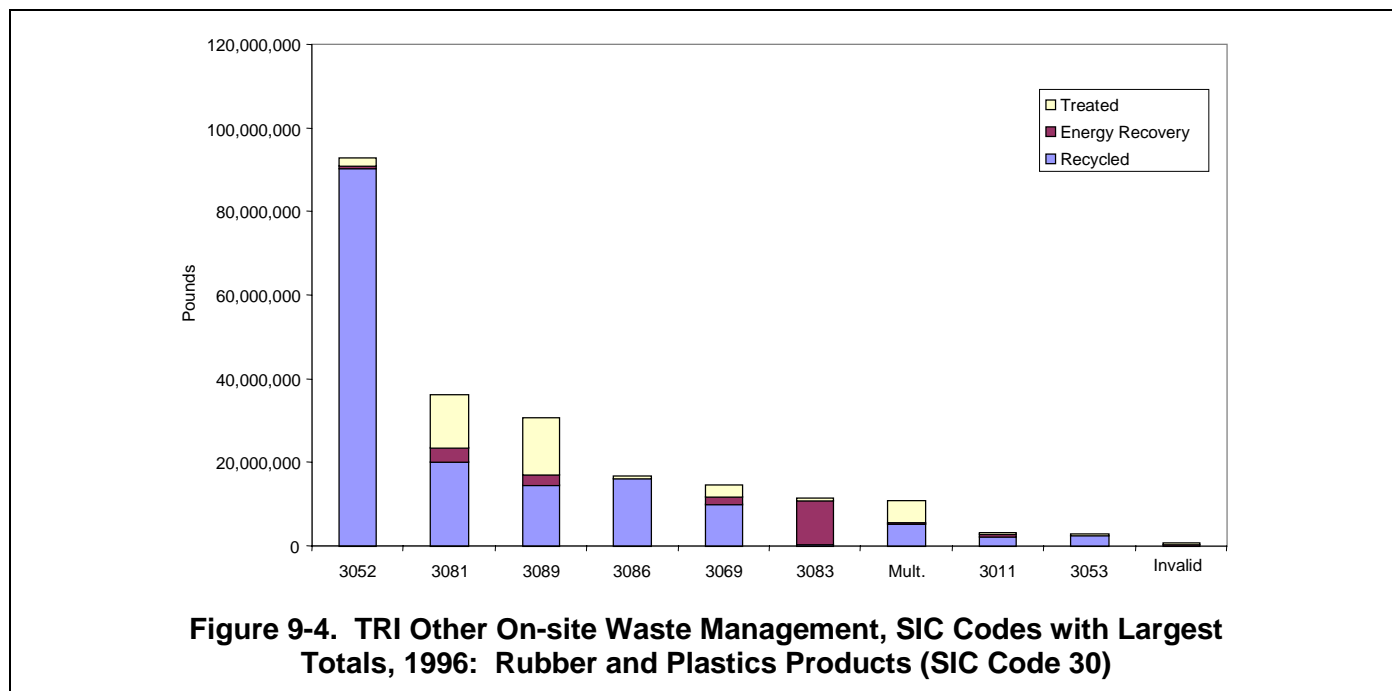
Note: Data from Section 8 of Form R.

Table 9-5 and Figure 9-5, transfers off-site to recycling were 11.8 million pounds, or 47.9% of the total. Miscellaneous plastics products (SIC code 3089) accounted for 3.3 million pounds of the transfers to recycling, and the group of TRI forms with multiple SIC codes reported another 2.7 million pounds. Miscellaneous plastics products also reported 2.0 million pounds transferred off-site for energy recovery, out of the 6.8 million pounds transferred off-site for energy recovery for the entire sector.

Figure 9-6 illustrates the distribution of off-site transfers for further waste management for the top industries in this sector.

1996 TRI Data by State for Rubber and Plastics Products

As shown in Table 9-6, 446 forms in this sector came from Ohio, more than any other state. Indiana



Note: Other On-site Waste Management from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category. Invalid SIC codes are codes beginning "30" that do not exist in the current Standard Industrial Classification code system.

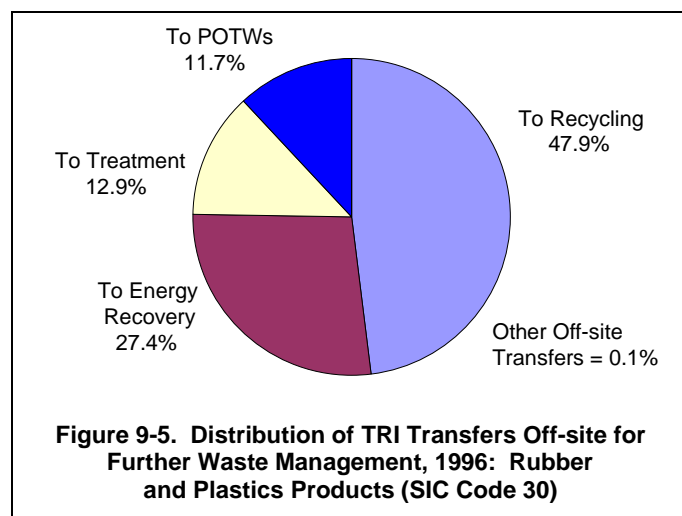


Table 9-5. TRI Transfers Off-site for Further Waste Management, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

SIC Code	Industry	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Off-site Transfers for Further Waste Management Pounds
3089	Plastics Products, nec*	3,252,620	2,008,938	511,302	388,747	250	6,161,857
	Multiple within SIC Code 30	2,692,165	795,630	409,304	40,854	0	3,937,953
3081	Unsupported Plastics Film & Sheet	667,460	1,177,872	668,145	52,906	328	2,566,711
3069	Fabricated Rubber Products, nec*	673,825	816,899	325,838	537,211	4,541	2,358,314
3083	Laminated Plastics Plate & Sheet	410,798	719,163	242,441	936,912	0	2,309,314
3011	Tires & Inner Tubes	1,355,478	94,155	188,299	37,888	0	1,675,820
3052	Rubber & Plastics Hose & Belting	1,248,573	227,971	26,685	12,221	0	1,515,450
3086	Plastics Foam Products	667,830	216,941	527,181	5,957	0	1,417,909
3061	Mechanical Rubber Goods	112,872	41,495	21,510	696,707	19,456	892,040
3053	Gaskets, Packing & Sealing Devices	154,946	396,149	164,785	1,544	0	717,424
3087	Custom Compound Purchased Resins	140,106	96,007	48,525	78,571	0	363,209
	Invalid SIC Code within SIC Code 30	184,039	121,394	3,141	24,750	0	333,324
3082	Unsupported Plastics Profile Shapes	196,056	3,957	21,106	75,831	0	296,950
3021	Rubber & Plastics Footwear	25,107	20,110	0	0	0	45,217
3088	Plastics Plumbing Fixtures	16,806	4,265	11,045	764	0	32,880
3084	Plastics Pipe	18,602	9,742	0	0	0	28,344
3085	Plastics Bottles	0	0	0	0	0	0
	Total for SIC Code 30	11,817,283	6,750,688	3,169,307	2,890,863	24,575	24,652,716

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

*nec: not elsewhere classified.



Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code.

was second with 304, and two states had more than 200 forms each: Texas with 208 and Illinois with 203.

States with the largest on- and off-site releases were Indiana with 12.7 million pounds and Tennessee with 12.5 million pounds. Illinois was third with 10.6 million pounds. The three accounted for a little over 30% of total on-and off-site releases in the rubber and plastics products sector.

By far the largest other on-site waste management was reported in Kansas: 102.4 million pounds or 46.4% of the total on-site waste management in this sector. Kansas is the location of the facility with the largest on-site recycling reported in this sector, which accounted for 89.2 million pounds of the on-site waste management reported in this sector. The state with the second-largest reported amount of on-site waste management was Kentucky with 14.5 million pounds, followed by three states with more than 10 million pounds each: Florida, 10.7

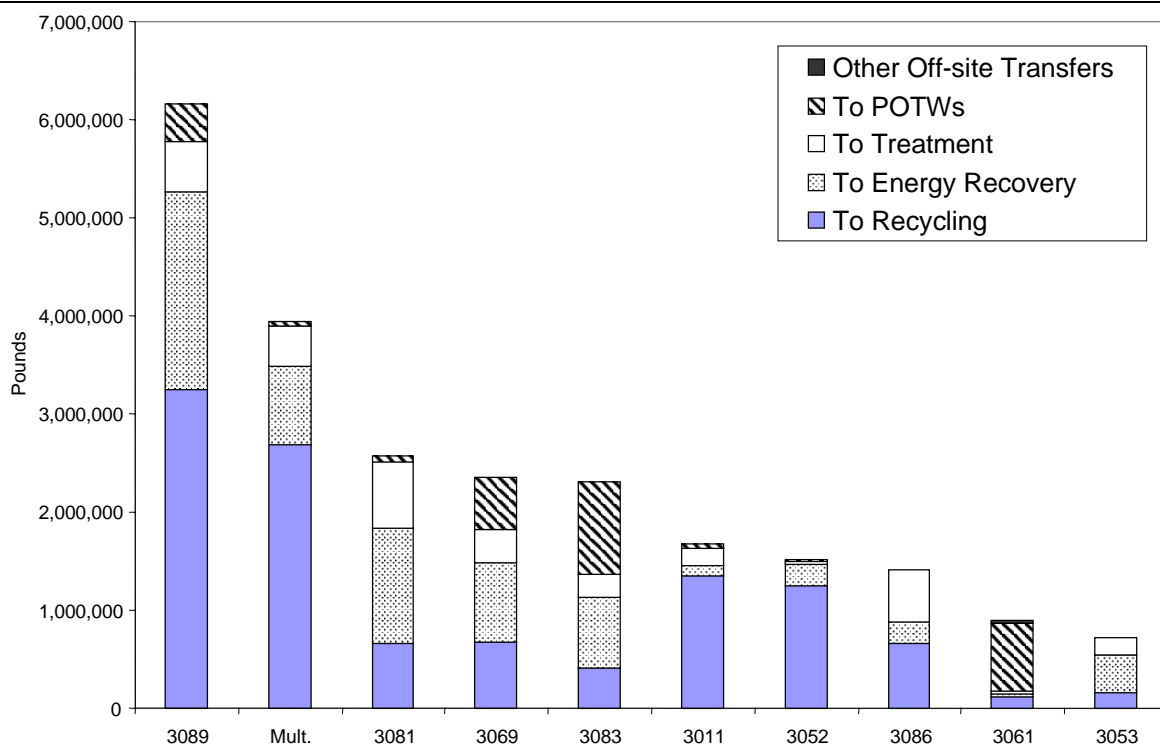


Figure 9-6. TRI Transfers Off-site for Further Waste Management, SIC Codes with Largest Totals, 1996: Rubber and Plastics Products (SIC Code 30)

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

million pounds; Missouri, 10.4 million pounds; and Texas, 10.3 million pounds.

Amounts transferred off-site for further waste management were largest in Ohio, with 3.2 million pounds and Arkansas with 2.9 million pounds. No other state had more than 2 million pounds of such transfers.

Total production-related waste was 103.9 million pounds in Kansas, reflecting the large quantity of on-site recycling by one facility. Indiana had 22.3 million pounds and Kentucky 17.3 million pounds. Another 10 states had total production-related waste of amounts ranging from 11 million to 16 million pounds, indicating the geographic diversity of the sector.

Map 9-1 illustrates the geographic distribution of total on- and off-site releases in the rubber and plastics products sector.

1996 TRI Data by Chemical for Rubber and Plastics Products

Air emissions were the primary release type for 13 of the top 15 chemicals for total on- and off-site releases in this sector. This is consistent with the role of air emissions in the rubber and plastics products sector as a whole, as discussed above. As shown in Table 9-7, more dichloromethane was released to air in the rubber and plastics products sector than any other chemical, with 24.9 million pounds. This made dichloromethane the chemical

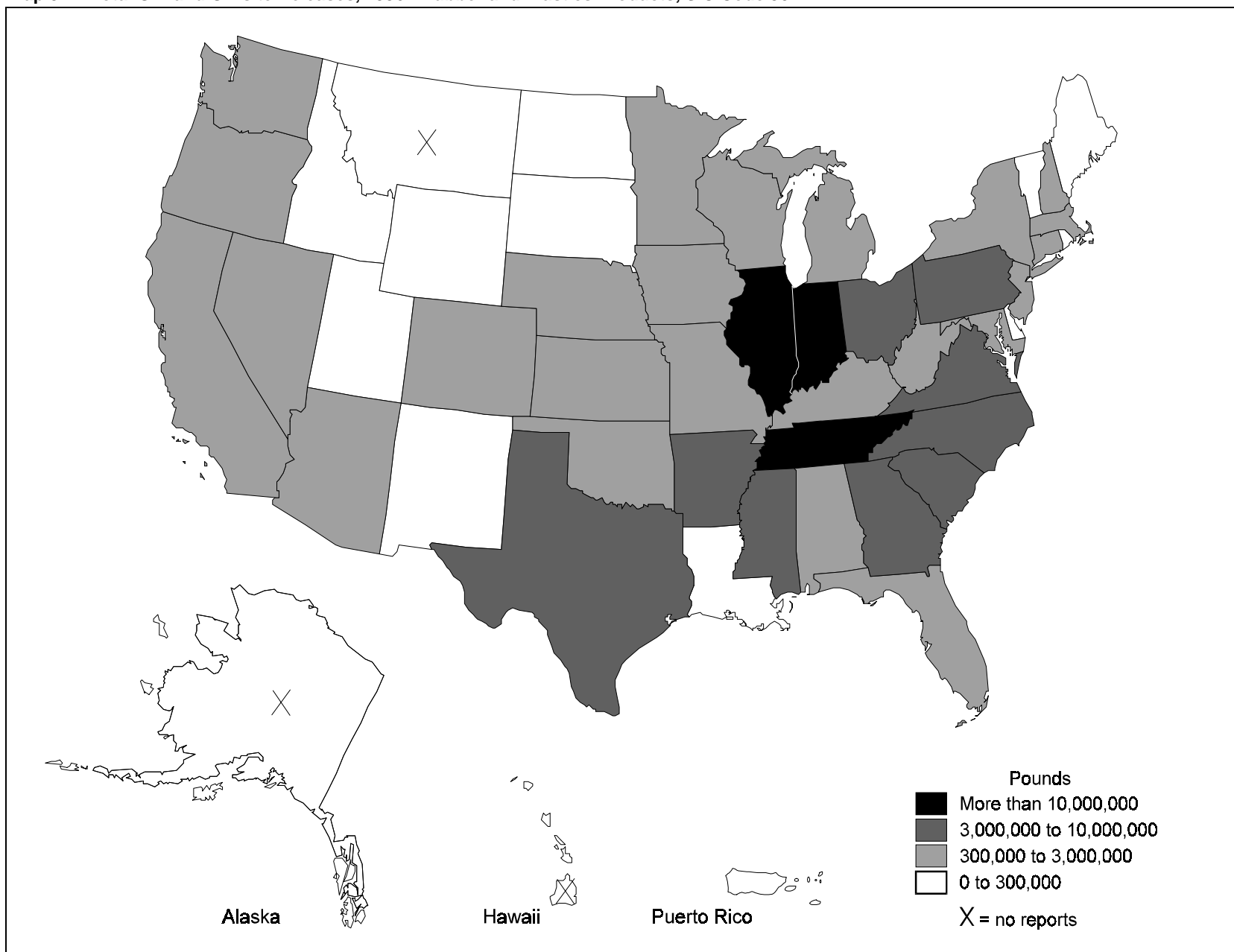


Table 9-6. Summary of TRI Information by State, 1996: Rubber and Plastics Products, SIC Code 30

State	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
Alabama	29	65	1	1,584,388	194,253	1,778,641	2,275,700	897,701	5,126,033	2
Arizona	24	41	4	592,503	1,074	593,577	25	61,771	648,598	0
Arkansas	30	84	5	2,935,010	180,113	3,115,123	3,287,929	2,863,481	9,407,118	5,410
California	89	169	17	2,108,979	477,928	2,586,907	3,650,601	767,088	6,944,532	3,588
Colorado	14	21	0	295,485	20,161	315,646	572,601	23,791	903,844	0
Connecticut	18	33	2	781,538	5,264	786,802	1,155,027	301,128	2,196,993	65
Delaware	8	13	0	168,320	2,182	170,502	2,933,124	232,650	3,326,924	9,500
Florida	49	70	3	2,354,680	31,591	2,386,271	10,740,996	553,020	13,906,208	1,320
Georgia	65	120	15	3,737,219	197,319	3,934,538	2,501,820	823,080	7,774,789	7
Idaho	1	1	0	22,600	0	22,600	0	0	22,600	0
Illinois	96	203	18	10,089,432	472,037	10,561,469	2,279,038	1,295,121	14,289,985	7,012
Indiana	125	304	23	11,770,102	911,071	12,681,173	7,868,807	1,638,205	22,332,224	50,010
Iowa	30	45	6	1,484,629	94,017	1,578,646	178,355	162,212	1,811,733	0
Kansas	21	49	8	879,683	222,806	1,102,489	102,444,162	358,989	103,862,703	0
Kentucky	35	65	3	2,411,397	75,120	2,486,517	14,485,372	279,963	17,308,652	1,426
Louisiana	8	16	3	173,127	10	173,137	5	0	180,922	0
Maine	7	13	3	77,252	17,300	94,552	0	12,871	90,738	1
Maryland	13	25	7	464,015	19,960	483,975	102,138	102,499	662,116	0
Massachusetts	40	91	15	1,104,455	101,603	1,206,058	5,477,510	769,530	7,453,598	0
Michigan	74	135	14	1,953,631	189,299	2,142,930	811,887	506,779	3,394,509	16,650
Minnesota	38	58	4	881,706	47,716	929,422	75,065	1,041,626	2,062,647	0
Mississippi	32	57	2	3,688,184	155,272	3,843,456	180,022	412,435	4,440,256	0
Missouri	50	103	5	1,890,441	286,297	2,176,738	10,380,263	848,870	13,450,456	1,532
Nebraska	12	35	0	1,387,095	245,188	1,632,283	208,594	167,880	1,993,605	614
Nevada	6	15	1	645,720	22,908	668,628	400	0	669,520	0
New Hampshire	11	25	0	477,805	33,164	510,969	444,288	111,973	1,177,755	300
New Jersey	46	101	13	431,371	78,447	509,818	1,927,350	479,690	2,886,375	2
New Mexico	3	4	1	13,934	0	13,934	45,635	806	59,560	0
New York	39	72	3	1,973,208	324,091	2,297,299	2,718,819	470,422	5,405,390	0
North Carolina	98	198	16	6,386,579	714,846	7,101,425	5,874,343	1,049,344	13,937,883	43
North Dakota	3	3	0	33,967	0	33,967	9,966	1,350	43,506	0
Ohio	186	446	50	5,759,325	1,320,136	7,079,461	3,271,697	3,214,022	13,883,644	5,650
Oklahoma	18	39	1	620,959	356,998	977,957	478,397	457,880	1,929,495	0
Oregon	18	23	0	1,410,762	1,290	1,412,052	10,302	9,294	1,426,722	2,511
Pennsylvania	90	174	12	5,738,713	288,302	6,027,015	3,387,181	714,657	9,793,927	340
Puerto Rico	7	10	2	155,614	0	155,614	206,244	14,093	343,494	500
Rhode Island	13	31	6	212,036	21,938	233,974	3,712,581	372,758	11,436,260	2,978
South Carolina	46	121	6	7,082,113	395,856	7,477,969	7,846,320	926,631	16,321,169	6,200
South Dakota	4	7	0	108,842	43,751	152,593	35,309	12,912	200,068	0
Tennessee	72	161	12	10,316,011	2,233,879	12,549,890	765,227	612,432	14,248,298	300
Texas	113	208	29	4,148,625	313,474	4,462,099	10,273,761	812,954	15,188,008	112
Utah	7	17	0	272,896	5,410	278,306	31,314	5,507	282,485	0
Vermont	2	4	2	2,647	689	3,336	0	0	3,335	0
Virginia	39	92	4	4,369,281	206,494	4,575,775	6,984,687	427,291	11,954,289	15,168
Washington	17	32	6	825,049	6,272	831,321	89,346	6,439	918,311	1
West Virginia	12	23	4	681,859	38,064	719,923	19,598	65,198	790,987	0
Wisconsin	65	124	16	1,288,418	264,096	1,552,514	955,320	766,373	3,297,998	0
Wyoming	1	1	1	0	0	0	0	0	0	0
Total for SIC Code 30	1,824	3,747	343	105,791,605	10,617,686	116,409,291	220,697,126	24,652,716	369,790,262	131,242

Note: On-site Releases from Section 5 of Form R. On-site Waste Management from Section 8 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Total Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Total Production-related Waste sums Section 8 (Current Year, Column B) of Form R, except: Non-production-related Waste (remedial/catastrophic incidents).

Map 9-1. Total On- and Off-site Releases, 1996: Rubber and Plastics Products, SIC Code 30



Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R.



Table 9-7. The 15 Chemicals with the Largest Total On-site and Off-site Releases, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

CAS Number	Chemical	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
75-09-2	Dichloromethane	24,936,111	10	0	0	0	1,162	24,937,283	5,274	24,942,557
100-42-5	Styrene	19,980,164	18	0	0	23,500	144,214	20,147,896	2,318,865	22,466,761
75-15-0	Carbon disulfide	12,588,600	404	0	0	0	0	12,589,004	0	12,589,004
108-88-3	Toluene	10,647,737	689	0	0	3,212	0	10,651,638	33,262	10,684,900
78-93-3	Methyl ethyl ketone	7,839,262	0	0	0	0	0	7,839,262	34,619	7,873,881
--	Zinc compounds	184,658	12,363	0	0	9,474	69,408	275,903	4,810,788	5,086,691
67-56-1	Methanol	4,764,537	0	0	0	0	77	4,764,614	697	4,765,311
110-54-3	n-Hexane	4,258,280	5	0	0	0	0	4,258,285	2,750	4,261,035
1330-20-7	Xylene (mixed isomers)	3,151,126	10	0	0	0	0	3,151,136	200	3,151,336
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	2,167,161	0	0	0	0	5,353	2,172,514	123,439	2,295,953
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	1,888,731	0	0	0	0	0	1,888,731	0	1,888,731
108-95-2	Phenol	1,491,565	1,461	0	0	0	4,576	1,497,602	96,094	1,593,696
108-10-1	Methyl isobutyl ketone	1,584,572	0	0	0	0	0	1,584,572	250	1,584,822
117-81-7	Di-(2-ethylhexyl) phthalate	296,350	26	0	0	250	57,512	354,138	1,154,421	1,508,559
--	Glycol ethers	1,215,913	4,306	0	0	0	15,269	1,235,488	81,921	1,317,409
	Subtotal	96,994,767	19,292	0	0	36,436	297,571	97,348,066	8,662,580	106,010,646
	Total for SIC Code 30	105,315,755	27,815	750	0	48,918	398,367	105,791,605	10,617,686	116,409,291

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

with the largest on-site releases and the largest total on- and off-site releases. The largest industrial source of dichloromethane releases in this sector was the plastics foam products industry (SIC code 3086), with 23.3 million pounds. Dichloromethane serves as a blowing agent in production of plastics foam.

Styrene ranked second in air emissions, on-site releases, off-site releases, and total releases; it also had the largest on-site land releases. Carbon disulfide ranked third for total releases, almost exclusively as air emissions. These chemicals were reported in large amounts by producers of miscellaneous plastics products (SIC code 3089). This industry reported 10.2 million pounds of air emissions of styrene and 2.1 million pounds in off-site releases (transfers to disposal). Styrene is a component of many plastics production processes, including fiberglass. All reported releases of carbon disulfide in this sector originated in the miscellaneous plastics products

industry, although the chemical has uses in rubber production as well.

Off-site releases (transfers to disposal) were led by zinc compounds, with 4.8 million pounds. This was also the chemical with the largest surface water discharges (12,000 pounds). The manufacture of rubber products often relies on zinc compounds for several purposes, such as processing aid and vulcanizing accelerator. Among the top 15 chemicals, only zinc compounds and di-(2-ethylhexyl) phthalate had off-site releases larger than on-site releases.

OSHA Carcinogens

In the rubber and plastics sector, on- and off-site releases of chemicals designated as OSHA carcinogens totaled 51.0 million pounds in 1996, as shown in Table 9-8. This represented 43.8% of all releases in this sector. (OSHA carcinogens and the bases for their designation appear in Box 1-9 in Chapter 1.) Consistent with the pattern of releases in



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-8. TRI On-site and Off-site Releases of OSHA Carcinogens by 4-digit SIC Code, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

SIC Code	Industry	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases	
				Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds		Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
3086	Plastics Foam Products	23,461,382	5	0	0	0	1,681	23,463,068	25,488	23,488,556
3089	Plastics Products, nec*	11,355,557	261	0	0	23,750	166,174	11,545,742	2,090,712	13,636,454
3088	Plastics Plumbing Fixtures	7,874,057	0	0	0	0	5	7,874,062	29,880	7,903,942
	Multiple within SIC Code 30	730,112	24	0	0	2,763	11,250	744,149	497,397	1,241,546
3069	Fabricated Rubber Products, nec*	460,912	1	0	0	0	750	461,663	581,194	1,042,857
3083	Laminated Plastics Plate & Sheet	928,263	0	0	0	0	204	928,467	1,590	930,057
3052	Rubber & Plastics Hose & Belting	309,933	0	0	0	0	25,292	335,225	300,584	635,809
	Invalid SIC Code within SIC Code 30	502,730	2	0	0	0	0	502,732	11,877	514,609
3081	Unsupported Plastics Film & Sheet	441,917	8	0	0	0	5	441,930	3,019	444,949
3087	Custom Compound Purchased Resins	376,020	12	0	0	0	8	376,040	66,132	442,172
3011	Tires & Inner Tubes	49,347	80	0	0	0	0	49,427	184,722	234,149
3084	Plastics Pipe	168,038	0	0	0	0	0	168,038	0	168,038
3053	Gaskets, Packing & Sealing Devices	137,937	0	0	0	0	0	137,937	0	137,937
3082	Unsupported Plastics Profile Shapes	81,195	0	0	0	0	0	81,195	15,719	96,914
3061	Mechanical Rubber Goods	45,729	0	0	0	0	0	45,729	255	45,984
3021	Rubber & Plastics Footwear	3,265	0	0	0	0	0	3,265	5,292	8,557
	Subtotal	46,926,394	393	0	0	26,513	205,369	47,158,669	3,813,861	50,972,530
	Total for SIC Code 30	105,315,755	27,815	750	0	48,918	398,367	105,791,605	10,617,686	116,409,291

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified

this sector, 92.1% (46.9 million pounds) of these releases were air emissions.

Plastics foam products (SIC code 3086) reported the largest total releases of the OSHA carcinogens, 23.5 million pounds. The miscellaneous plastics products industry group (SIC code 3089) had 13.6 million pounds, and plastics plumbing fixtures (SIC code 3088) reported 7.9 million pounds.

The top two chemicals for total releases in this sector, dichloromethane and styrene, are both OSHA carcinogens. Total releases for these chemicals were 24.9 million pounds and 22.5 million pounds, respectively (see Table 9-7). Releases of other OSHA carcinogens were reported in smaller amounts: One other TRI chemical among the top 15 chemicals released in this sector was an OSHA carcinogen. This was di-(2-ethylhexyl) phthalate (1.5 million pounds). The OSHA carcinogen with the next-largest releases was trichloroethylene (918,000 pounds).

Figure 9-7 shows the on- and off-site releases of the four-digit SIC codes with the largest OSHA carcinogen releases.

1996 TRI Chemicals in Waste for Rubber and Plastics Products

Table 9-9 and Figure 9-8 present 1996 waste management data for the industries in rubber and plastics products manufacturing. Production-related waste totaled 369.8 million pounds in 1996. The industry within the sector with the largest on-site waste management was rubber and plastics hose and belting (SIC code 3052). Of the 97.8 million pounds of production-related waste reported in this industry, 90.3 million pounds was on-site recycling and 89.2 million pounds of this was reported by one facility, as noted throughout this chapter.

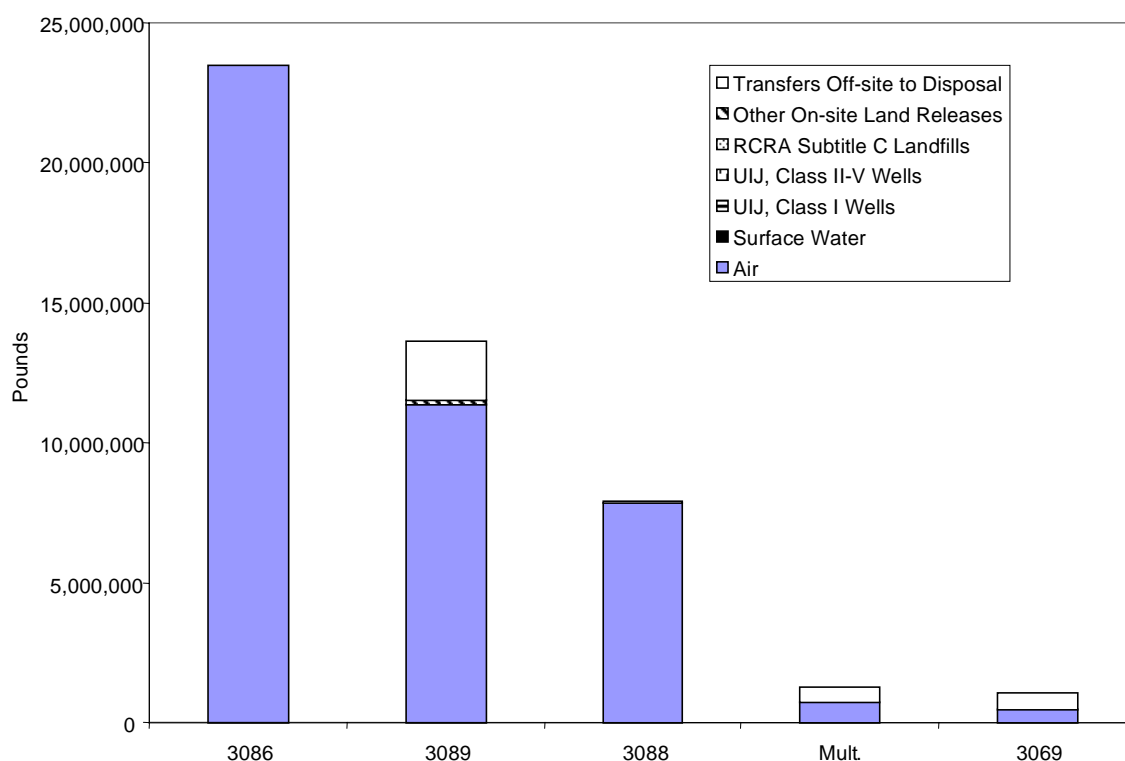


Figure 9-7. TRI On-site and Off-site Releases of OSHA Carcinogens, SIC Codes with Largest Totals, 1996: Rubber and Plastics Products (SIC Code 30)

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R. UIJ = underground injection. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

Table 9-9. Quantities of TRI Chemicals in Waste by 4-digit SIC Code, 1996: Rubber and Plastics Products, SIC Code 30 (in Rank Order)

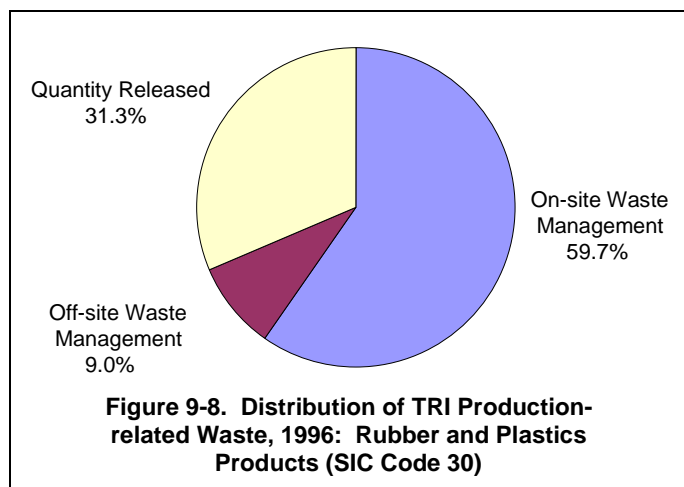
SIC Code	Industry	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Recycled Off-site Pounds	Energy Recovery Off-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
3052	Rubber & Plastics Hose & Belting	90,279,770	787,943	1,640,325	1,229,184	224,936	34,841	3,594,469	97,791,468	614
3089	Plastics Products, nec*	14,554,683	2,335,531	13,707,089	4,295,212	2,753,857	873,325	34,382,585	72,902,282	531
3081	Unsupported Plastics Film & Sheet	20,224,009	3,153,847	12,858,491	7,756,166	1,309,195	780,433	4,428,903	50,511,044	3,070
3086	Plastics Foam Products	16,044,545	0	761,367	625,037	188,526	492,523	31,089,650	49,201,648	85,257
3069	Fabricated Rubber Products, nec*	9,896,971	1,713,342	2,801,680	648,956	1,003,320	906,867	9,715,226	26,686,362	6,755
	Multiple within SIC Code 30	5,331,123	150,024	5,357,122	2,660,942	808,657	399,799	6,738,937	21,446,604	5,900
3083	Laminated Plastics Plate & Sheet	283,746	10,561,479	624,205	409,539	644,381	1,184,040	7,044,208	20,751,598	1,300
3011	Tires & Inner Tubes	2,113,611	720,000	157,933	1,432,541	94,785	74,106	5,075,366	9,668,342	0
3088	Plastics Plumbing Fixtures	0	0	9	30,246	4,040	10,857	7,322,263	7,367,415	2,511
3053	Gaskets, Packing & Sealing Devices	2,439,515	0	417,493	153,477	395,304	54,232	1,782,907	5,242,928	7,012
	Invalid SIC Code within SIC Code 30	60,458	175,977	429,576	169,553	121,212	40,941	1,248,387	2,246,104	0
3061	Mechanical Rubber Goods	209,772	0	18,627	122,392	37,163	722,847	965,425	2,076,226	1,532
3087	Custom Compound Purchased Resins	479,925	0	20,293	99,481	95,437	138,908	1,047,595	1,881,639	16,650
3021	Rubber & Plastics Footwear	9,482	0	0	25,057	47,208	0	895,938	977,685	0
3082	Unsupported Plastics Profile Shapes	135,030	0	76,641	196,056	3,957	95,669	188,966	696,319	110
3084	Plastics Pipe	0	0	162,488	12,502	0	0	164,514	339,504	0
3085	Plastics Bottles	0	0	3,004	0	0	0	90	3,094	0
	Total for SIC Code 30	162,062,640	19,598,143	39,036,343	19,866,341	7,731,978	5,809,388	115,685,429	369,790,262	131,242

Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the “multiple” category.

*nec: not elsewhere classified.



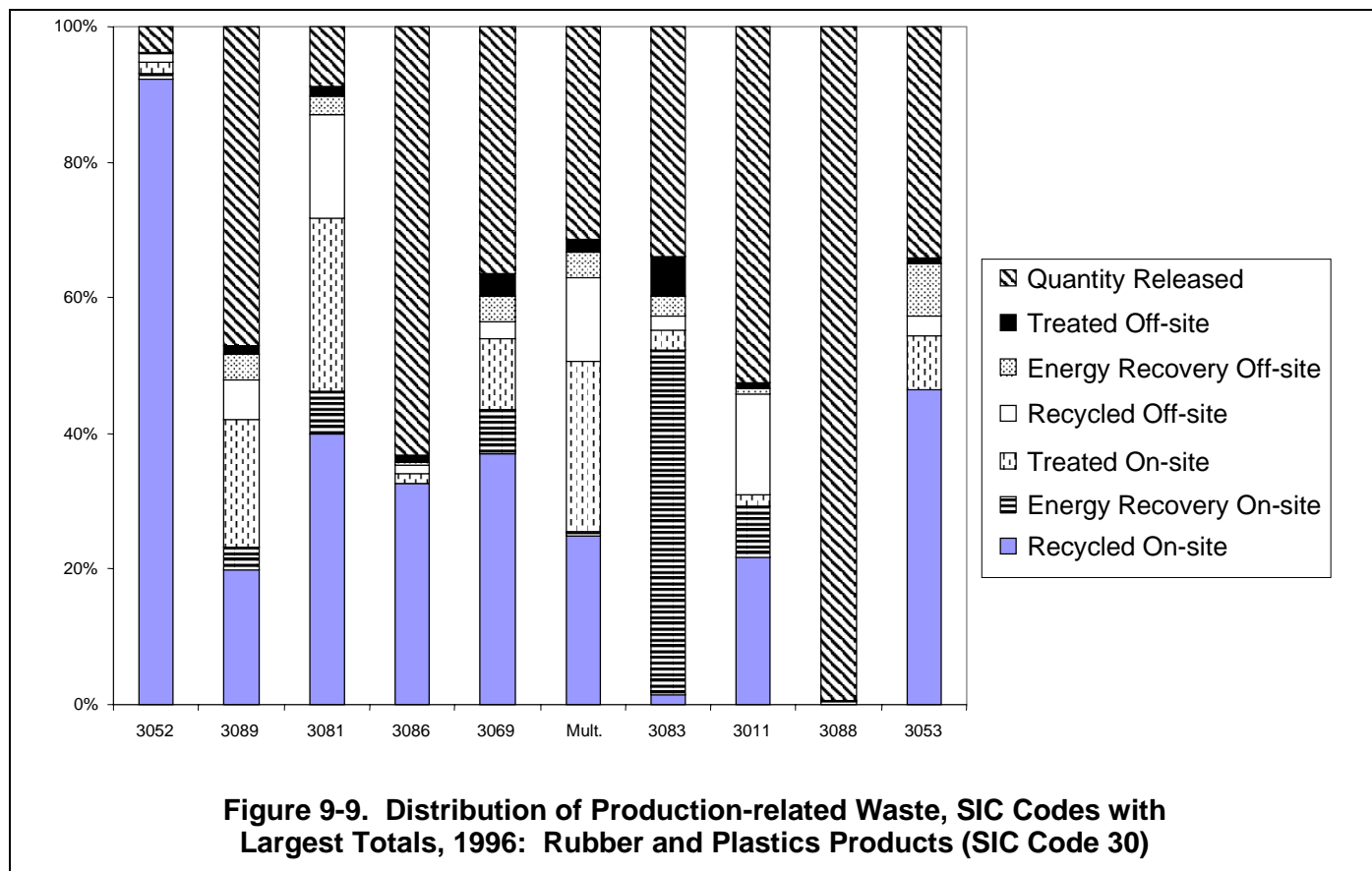
Chapter 9 — TRI Data for Rubber and Plastics Products



Note: Data from Section 8 of Form R.

Other reporting of production-related waste was somewhat more diverse. Miscellaneous plastics products (SIC code 3089), which was second overall, had the largest quantities treated on-site (13.7 million pounds), sent off-site for energy recovery (2.8 million pounds), and released on- and off-site (34.4 million pounds). Producers of laminated plastics plate and sheet (SIC code 3083) reported the largest quantities of on-site energy recovery (10.6 million pounds) and the largest quantities treated off-site (1.2 million pounds). Unsupported plastics film and sheet (SIC code 3081) was first for off-site recycling (7.8 million pounds).

Distribution of production-related waste for the top industries in the sector appears in Figure 9-9.



Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC Code within SIC code 30 are assigned to the "multiple" category.



Projected Quantities of TRI Chemicals in Waste

Reported amounts on TRI forms filed for 1996 in the rubber and plastics products sector projected that total production-related waste would decrease by 90.0 million pounds, or nearly one fourth (24.3%), by reporting year 1998. As shown in Table 9-10, the largest percentage reduction, 53.6%, was expected in on-site recycling; this would be a decrease of 86.8 million pounds. This reflects further reductions anticipated by the facility reporting the largest amount of on-site recycling. Table 9-10 shows current year and projected waste management data, and percentage changes are illustrated in Figure 9-10. (As explained in Chapter 1, facilities not only report current data but project waste management quantities for the next two years in their TRI submissions.)

The quantity released on- and off-site was also projected to decline, by 16.9 million pounds or 14.6%. Such releases constituted nearly one-third (31.3%) of total production-related waste in this sector in 1996. Despite the projected decrease, quantities released would form a larger proportion (35.3%) of production-related waste in 1998, because of the much larger drop in on-site recycling. This sector reports releasing a greater proportion of production-related waste than do many others.

Increases were projected in most other types of waste management in this sector, although the quantities involved are smaller. In particular, on-site energy recovery and treatment were projected to increase (by 10.0% and 27.4%, respectively).

These projected changes suggest that the sector does not expect to improve its management of TRI chemicals in waste, as measured against the waste management hierarchy. In that hierarchy, as explained in Chapter 1, recycling is the preferred management option for waste that is not prevented or cannot be prevented in the first place. The least

desirable option is releasing the chemical to the environment. In these terms, projections in the rubber and plastics products sector indicate that less desirable performance is expected.

Source Reduction Activity

Of the 3,747 forms submitted in the rubber and plastics products sector, 800 reported source reduction activity during 1996. Table 9-11 shows the number of forms and categories of source reduction activity by four-digit SIC code. Rubber and plastics footwear manufacturers (SIC code 3021) had the highest percentage (64.5%) of forms indicating source reduction activity. In several industries, 25% to 35% of the forms reported such activities. Miscellaneous fabricated rubber products (SIC code 3069) and miscellaneous plastics products (SIC code 3089), which accounted for a substantial proportion of the sector's releases, had about 21% of forms with source reduction activity.

Good operating practices was the category most often reported (289 forms). Two others were also cited on more than 200 forms each: raw material modifications (241 forms) and process modifications (207 forms). Such modifications often represent more innovative pollution prevention projects.

Year-to-Year Comparisons for Rubber and Plastics Products

1995-1996 TRI Data for Rubber and Plastics Products

Although the number of forms submitted in the rubber and plastics products sector dropped 4.4% from 1995 to 1996, the number of Form A certification statements increased 15.9%, as shown in Table 9-12. (The Form A certification statement is explained in Chapter 1.) This may reflect more widespread awareness of the Form A certification statement in its second year of availability.



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-10. Current Year and Projected Quantities of TRI Chemicals in Waste, 1996-1998: Rubber and Plastics Products, SIC Code 30

Waste Management Activity	Current Year 1996		Projected 1997		Projected 1998	
	Total Pounds	Percent of Total	Total Pounds	Percent of Total	Total Pounds	Percent of Total
<u>On-site Waste Management</u>						
Recycled On-site	162,062,640	43.8	120,820,121	38.1	75,247,536	26.9
Energy Recovery On-site	19,598,143	5.3	21,003,772	6.6	21,560,812	7.7
Treated On-site	39,036,343	10.6	34,802,671	11.0	49,746,655	17.8
<u>Off-site Waste Management</u>						
Recycled Off-site	19,866,341	5.4	20,526,534	6.5	20,934,761	7.5
Energy Recovery Off-site	7,731,978	2.1	8,003,170	2.5	7,526,913	2.7
Treated Off-site	5,809,388	1.6	5,723,015	1.8	5,959,877	.21
Quantity Released On- and Off-site	115,685,429	31.3	106,222,829	33.5	98,793,085	35.3
Total Production-related Waste for SIC Code 30	369,790,262	100.0	317,102,112	100.0	279,769,639	100.0
Waste Management Activity	Projected Change		Projected Change		Projected Change	
	1996-1997 Percent		1997-1998 Percent		1996-1998 Percent	
<u>On-site Waste Management</u>						
Recycled On-site	-25.4		-37.7		-53.6	
Energy Recovery On-site	7.2		2.7		10.0	
Treated On-site	-10.8		42.9		27.4	
<u>Off-site Waste Management</u>						
Recycled Off-site	3.3		2.0		5.4	
Energy Recovery Off-site	3.5		-6.0		-2.7	
Treated Off-site	-1.5		4.1		2.6	
Quantity Released On- and Off-site	-8.2		-7.0		-14.6	
Total Production-related Waste for SIC Code 30	-14.2		-11.8		-24.3	

Note: Current year and projected year amounts are all taken from Section 8 of Form R for 1996.

On- and Off-site Releases

Releases on- and off-site decreased by 8.5% from 1995 to 1996, a decrease of 10.8 million pounds (see Table 9-12). This was largely the result of a corresponding decrease in air emissions (8.3%, or 9.5 million pounds), as would be expected with air emissions playing such a dominant role in the sector's releases. The reduction in releases to air

came about equally from fugitive (4.8 million pounds) and point (4.7 million pounds) sources.

Off-site releases (transfers to disposal) decreased 10.6%, or 1.3 million pounds. Other release types showed large percentage changes, as illustrated in Figure 9-11, but these represent smaller absolute amounts. On-site land releases increased 46.7%, or 142,000 pounds.

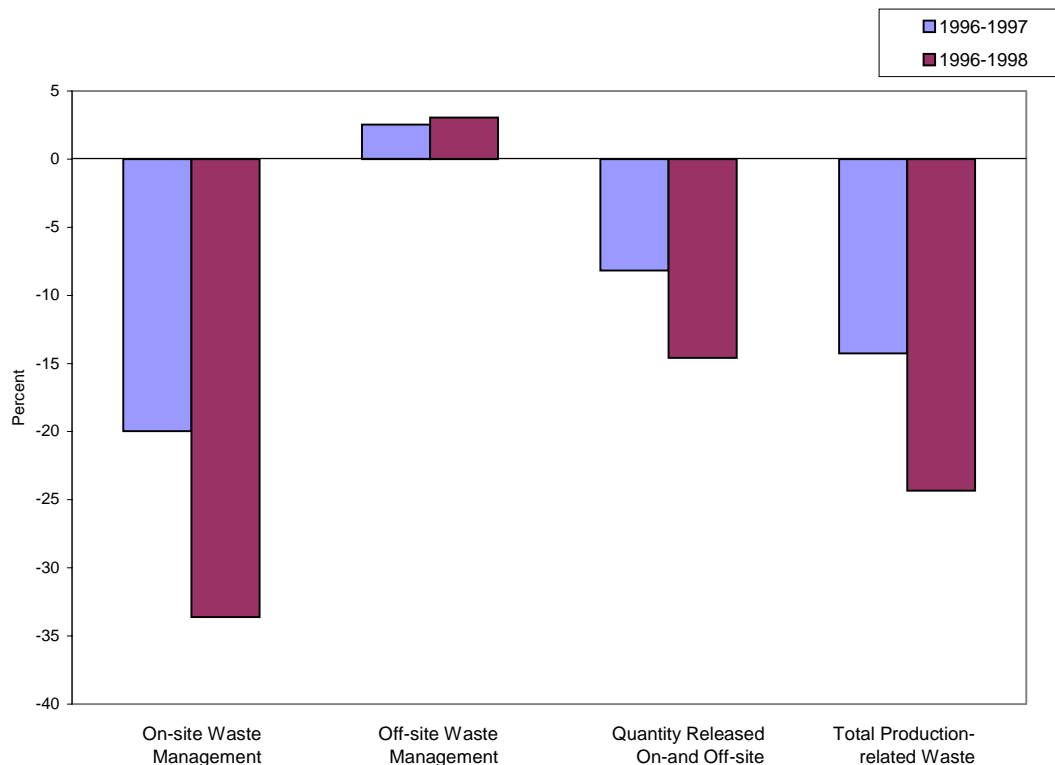


Figure 9-10. Projected Percentage Change in Quantities of TRI Chemicals in Waste, 1996-1998: Rubber and Plastics Products (SIC Code 30)

Note: Current year and projected year amounts are all taken from Section 8 of Form R for 1996.

Table 9-11. Number of Forms Reporting Source Reduction Activity, 1996: Rubber and Plastics Products, SIC Code 30

SIC Code	Industry	Total Forms Number	Forms Reporting Source Reduction Activities		Category of Source Reduction Activity							
			Number	Percent	Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Material Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Preparation and Finishing Number	Product Modifications Number
3011	Tires & Inner Tubes	205	29	14.1	8	4	5	7	7	0	2	1
3021	Rubber & Plastics Footwear	31	20	64.5	16	1	0	4	0	0	0	0
3052	Rubber & Plastics Hose & Belting	129	26	20.2	11	4	2	5	7	1	2	7
3053	Gaskets, Packing & Sealing Devices	79	20	25.3	7	2	1	6	4	1	1	0
3061	Mechanical Rubber Goods	102	26	25.5	12	7	1	2	5	4	6	0
3069	Fabricated Rubber Products, nec*	476	99	20.8	34	15	6	18	29	5	13	13
3081	Unsupported Plastics Film & Sheet	160	50	31.3	13	4	14	10	7	4	1	11
3082	Unsupported Plastics Profile Shapes	41	14	34.1	4	1	1	5	4	0	4	2
3083	Laminated Plastics Plate & Sheet	110	29	26.4	6	3	3	6	16	9	2	3
3084	Plastics Pipe	15	0	0.0	0	0	0	0	0	0	0	0
3085	Plastics Bottles	6	0	0.0	0	0	0	0	0	0	0	0
3086	Plastics Foam Products	521	101	19.4	17	5	8	58	22	6	7	8
3087	Custom Compound Purchased Resins	361	53	14.7	24	4	5	24	7	1	0	8
3088	Plastics Plumbing Fixtures	164	26	15.9	6	0	0	10	10	2	8	2
3089	Plastics Products, nec*	952	205	21.5	87	16	23	55	63	16	24	10
	Multiple within SIC Code 30	321	78	24.3	35	2	19	26	22	2	8	7
	Invalid SIC Code within SIC Code 30	74	24	32.4	9	2	0	5	4	6	9	2
	Total for SIC Code 30	3,747	800	21.4	289	70	88	241	207	57	87	74

Note: Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-12. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1995-1996: Rubber and Plastics Products, SIC Code 30

	1995 Number	1996 Number	Change 1995 to 1996 Percent
Total Facilities	1,881	1,824	-3.0
Total Forms	3,921	3,747	-4.4
Form Rs	3,625	3,404	-6.1
Form As	296	343	15.9
	Pounds	Pounds	Percent
<u>On-site Releases</u>			
Total Air Emissions	114,827,334	105,315,755	-8.3
Fugitive Air	32,349,396	27,540,757	-14.9
Point Source Air	82,477,938	77,774,998	-5.7
Surface Water Discharges	152,593	27,815	-81.8
Underground Injection	5	750	14,900.0
On-site Land Releases	304,898	447,285	46.7
Total On-site Releases	115,284,830	105,791,605	-8.2
<u>Off-site Releases</u>			
Transfers Off-site to Disposal	11,883,163	10,617,686	-10.6
Total On- and Off-site Releases	127,167,993	116,409,291	-8.5
<u>Other On-site Waste Management</u>			
Recycled On-site	311,405,281	162,062,640	-48.0
Energy Recovery On-site	21,703,785	19,598,143	-9.7
Treated On-site	47,308,429	39,036,343	-17.5
Total Other On-site Waste Management	380,417,495	220,697,126	-42.0
<u>Transfers Off-site for Further Waste Management</u>			
Transfers to Recycling	19,534,871	11,817,283	-39.5
Transfers to Energy Recovery	7,541,660	6,750,688	-10.5
Transfers to Treatment	3,042,927	3,169,307	4.2
Transfers to POTWs	2,684,018	2,890,863	7.7
Other Off-site Transfers	13,156	24,575	86.8
Total Transfers Off-site for Further Waste Management	32,816,632	24,652,716	-24.9

Note: **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required in 1995. Other Off-site Transfers are transfers reported without a valid waste management code.

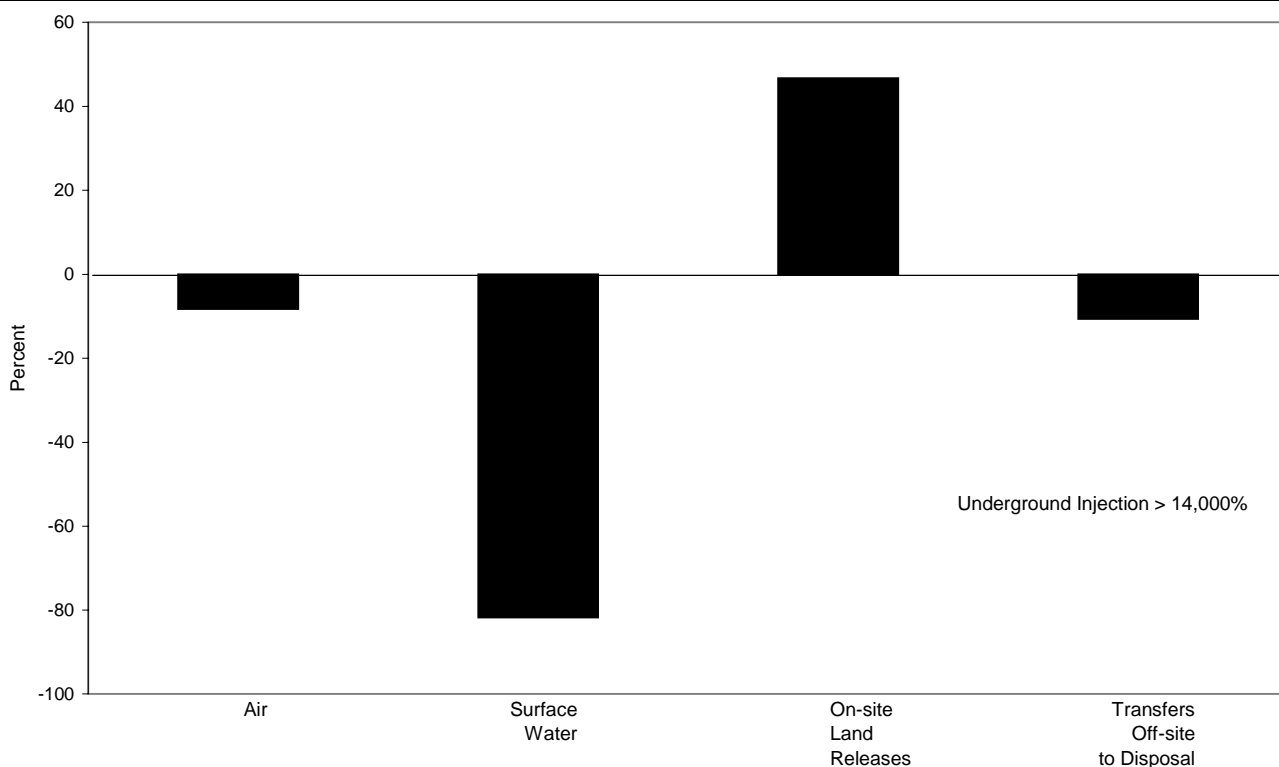


Figure 9-11. Percentage Change in On-site and Off-site Releases, 1995-1996: Rubber and Plastics Products (SIC Code 30)

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required in 1995.

Other On-site Waste Management

Table 9-12 also shows the changes from 1995 to 1996 in other on-site waste management for the rubber and plastics products sector. The largest change occurred in on-site recycling, which decreased by nearly half (48.0%, or 149.3 million pounds). This change was attributable to one facility that recorded a large reduction in on-site recycling of lead compounds, as discussed in “Facilities with Large Increases and Decreases in Waste Management, 1991-1996” later in this chapter.

On-site energy recovery and treatment also declined and, overall, other on-site waste management decreased 42.0% (159.7 million pounds) in the rubber and plastics products sector for 1995-1996.

Transfers Off-site for Further Waste Management

As with releases and other on-site waste management, transfers off-site for further waste management decreased from 1995 to 1996 in this sector. As shown in Table 9-12, the net decrease was 24.9%, or 8.2 million pounds. Transfers to recycling decreased by 39.5%, or 7.7 million pounds. A smaller reduction occurred in transfers to energy recovery, while the other off-site transfer types showed small increases.

Changes in SIC Codes

As indicated in facility descriptions below, some facilities report different SIC codes over time. This may reflect new or discontinued lines of production, or it may represent a different



understanding of how SIC code designations relate to a facility's business activities. These changes can contribute—sometimes largely—to apparent increases or decreases across comparison years in the amounts reported by the four-digit, or even two-digit, SIC codes.

1988-1996 TRI Data for Rubber and Plastics Products

As explained in Chapter 1, comparisons from the 1988 TRI baseline year to the current year rely on the list of “core” TRI chemicals that were reportable, with the same reporting definition, in all years. These multi-year comparisons also review only the data elements that were collected in all years, which excludes from this section any analysis that distinguishes RCRA subtitle C landfills from other land releases as well as analysis based on the types of underground injection wells. On-site waste management data and transfers off-site to recycling and to energy recovery have been collected only since 1991; these data are included, but cannot be compared across the full 1988-1996 period.

From 1988 to 1996, reporting of on- and off-site releases of the “core” chemicals fell by one third (33.4%) in this sector. This was a decrease of 53.0 million pounds. In both percentage and pounds, the largest reduction occurred in air emissions, 35.1% or 51.4 million pounds. All release types decreased over the period except for on-site land releases. These data appear in Table 9-13. Figure 9-12 presents the percentage changes by release type.

On-site waste management and transfers off-site for recycling or energy recovery were not collected in 1988. For the 1994-1996 period, all of these categories showed decreases except on-site treatment. The largest reduction, in both pounds and percentage, occurred in on-site recycling, which decreased from 302.3 million pounds to 160.1 million pounds, or 47.1%; again this relates largely to a single facility.

For categories reported across the full 1988-1996 comparison period, transfers off-site to treatment decreased 69.9%, or 6.4 million pounds, while transfers to POTWs decreased 58.8%, or 777,000 pounds.

The number of forms filed in this sector increased 1.3% from 1988 to 1996, in contrast to the trend across all sectors. This is because submissions in rubber and plastics manufacturing showed a larger increase in the early years of TRI than was the case for all sectors taken together.

As noted early in this chapter, this sector has experienced pronounced growth through the 1990s. Decreases in releases, other on-site waste management, and transfers off-site for further waste management since 1988 were accomplished even as facilities expanded their production capacity and new facilities came on line.

1988-1996 Data for Four-Digit Industries in Rubber and Plastics Products

Tables 9-14 through 9-16 summarize data for 1988 and 1994-1996 for industries at the four-digit SIC code level within SIC code 30. The tables present, respectively, on- and off-site releases, other on-site waste management, and transfers off-site for further waste management.

On- and Off-site Releases

The industry in the rubber and plastics products sector with the largest decrease in on-and off-site releases from 1988 to 1996 was miscellaneous fabricated rubber products (SIC code 3069). This industry's releases decreased 18.3 million pounds (67.5%). Forms that reported multiple SIC codes (explained earlier in this chapter) had total releases that decreased 6.4 million pounds (50.4%) during the comparison period. The industry with the third largest decrease was tires and inner tubes (SIC code 3011), with a 2.2-million-pound decrease (42.4%). These were all primarily reductions in air emissions.



Table 9-13. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30

	1988 Number	1994 Number	1995 Number	1996 Number	Change 1988 to 1996 Percent
Total Facilities	1,469	1,801	1,743	1,672	13.8
Total Forms	3,096	3,393	3,292	3,136	1.3
Form Rs	3,096	3,393	3,069	2,871	-7.3
Form As	NA	NA	223	265	NA
	Pounds	Pounds	Pounds	Pounds	Percent
<u>On-site Releases</u>					
Total Air Emissions	146,353,851	113,133,962	103,465,289	94,964,378	-35.1
Fugitive Air	40,654,046	31,044,869	26,883,985	23,286,889	-42.7
Point Source Air	105,699,805	82,089,093	76,581,304	71,677,489	-32.2
Surface Water Discharges	30,931	42,778	20,830	22,374	-27.7
Underground Injection	754	0	0	750	-0.5
On-site Land Releases	157,087	100,670	221,298	390,070	148.3
Total On-site Releases	146,542,623	113,277,410	103,707,417	95,377,572	-34.9
<u>Off-site Releases</u>					
Transfers Off-site to Disposal	11,771,176	12,184,698	11,057,941	9,980,619	-15.2
Total On- and Off-site Releases	158,313,799	125,462,108	114,765,358	105,358,191	-33.4
<u>Other On-site Waste Management</u>					
Recycled On-site	NA	302,332,267	309,823,629	160,059,514	NA
Energy Recovery On-site	NA	20,534,873	20,417,428	16,035,103	NA
Treated On-site	NA	26,464,963	24,941,008	28,022,460	NA
Total Other On-site Waste Management	NA	349,332,103	355,182,065	204,117,077	NA
<u>Transfers Off-site for Further Waste Management</u>					
Transfers to Recycling	NA	20,925,490	19,021,069	11,407,263	NA
Transfers to Energy Recovery	NA	8,122,891	7,262,452	6,417,186	NA
Transfers to Treatment	9,188,124	3,172,773	2,737,189	2,763,945	-69.9
Transfers to POTWs	1,320,533	1,014,507	708,699	543,666	-58.8
Other Off-site Transfers	393,879	1,628	11,510	24,575	-93.8
Total Transfers Off-site for Further Waste Management	NA	33,237,289	29,740,919	21,156,635	NA

Note: Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required before 1996. For 1994-1996, Other Off-site Transfers are transfers reported without a valid waste management code. For 1988, Other Off-site Transfers are transfers reported without a valid waste management code or codes not required to be reported in 1988. **NA:** not required to be reported in that year.

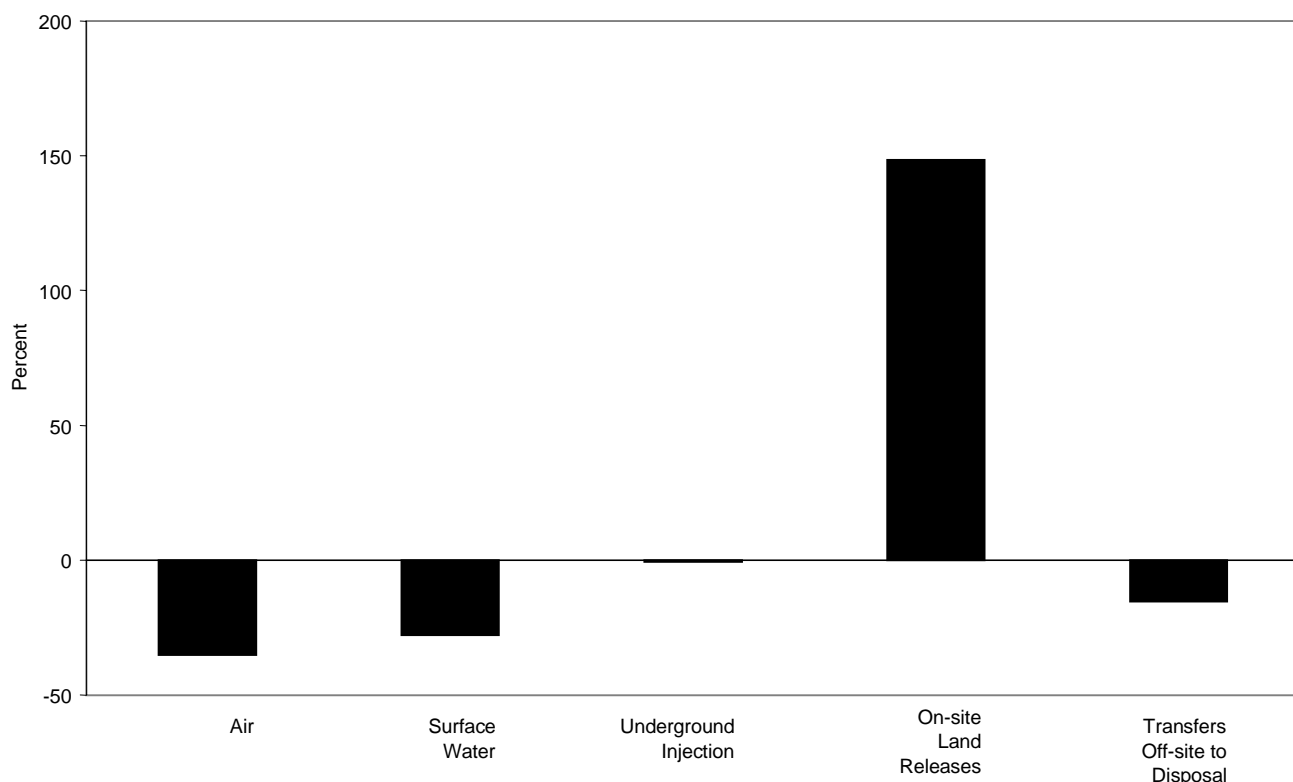


Figure 9-12. Percentage Change in On-site and Off-site Releases, 1988-1996: Rubber and Plastics Products (SIC Code 30)

Note: Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required before 1996.

Three industries had increases in total releases of more than 5 million pounds: plastics foam products (SIC code 3086) with a 13.9-million-pound increase (109.0%), plastics plumbing fixtures (SIC code 3088) with 6.9 million pounds (649.7%), and miscellaneous plastics products (SIC code 3089) with 5.2 million pounds (18.3%). For producers of foam products and plumbing fixtures, the net increase arose largely from air emissions. For miscellaneous plastics products, much of the increase occurred in air emissions and, to a lesser extent, in off-site releases (transfers to disposal). However, air emissions in the miscellaneous plastics products industry have been decreasing over the last few years.

Table 9-14 provides release data for all four-digit SIC codes in the rubber and plastics products sector, for 1988-1996.

Other On-site Waste Management

Rubber and plastics hose and belting (SIC code 3052) had the largest decrease in other on-site waste management since 1994 (on-site waste management data were not collected in 1988). This was a decrease of 130.7 million pounds, or 58.5%, which occurred principally in on-site recycling by one facility. Miscellaneous plastics products (SIC code 3089) was second with a decrease of 11.4 million pounds, or 36.7%, and miscellaneous



Table 9-14. TRI On-site and Off-site Releases by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30

SIC Code	Industry	Year	On-site Releases				Off-site Releases		Total On- and Off-site Releases Pounds
			Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
3011	Tires & Inner Tubes	96	584,906	10,424	0	19,216	614,546	2,413,943	3,028,489
		95	1,123,874	5,590	0	5,980	1,135,444	2,541,382	3,676,826
		94	826,009	21,672	0	23,835	871,516	2,503,522	3,375,038
		88	2,359,703	4,293	0	11,600	2,375,596	2,880,185	5,255,781
3021	Rubber & Plastics Footwear	96	117,085	0	0	0	117,085	32,454	149,539
		95	455,407	0	0	0	455,407	36,712	492,119
		94	788,702	0	0	0	788,702	97,991	886,693
		88	519,633	0	0	0	519,633	119,439	639,072
3052	Rubber & Plastics Hose & Belting	96	2,305,262	2,570	0	34,917	2,342,749	1,084,819	3,427,568
		95	3,755,431	3,270	0	16,993	3,775,694	1,454,455	5,230,149
		94	4,453,582	3,335	0	15,749	4,472,666	1,065,625	5,538,291
		88	3,639,811	181	0	0	3,639,992	551,309	4,191,301
3053	Gaskets, Packing & Sealing Devices	96	1,751,200	18	0	3,845	1,755,063	112,935	1,867,998
		95	2,704,014	11	0	59,270	2,763,295	146,389	2,909,684
		94	2,450,376	250	0	6,634	2,457,260	1,478,375	3,935,635
		88	2,059,523	0	0	2,980	2,062,503	182,741	2,245,244
3061	Mechanical Rubber Goods	96	622,656	200	0	17,000	639,856	139,519	779,375
		95	1,214,946	363	0	24,524	1,239,833	122,675	1,362,508
		94	946,943	343	0	2,402	949,688	129,626	1,079,314
		88	1,074,138	500	0	90	1,074,728	151,235	1,225,963
3069	Fabricated Rubber Products, nec*	96	7,068,784	4,182	750	52,187	7,125,903	1,702,753	8,828,656
		95	7,438,648	2,131	0	12,141	7,452,920	1,926,605	9,379,525
		94	9,827,764	8,525	0	14,230	9,850,519	1,718,523	11,569,042
		88	24,999,605	1,831	0	24,061	25,025,497	2,111,784	27,137,281
3081	Unsupported Plastics Film & Sheet	96	3,112,811	216	0	2,506	3,115,533	60,165	3,175,698
		95	4,089,280	339	0	5	4,089,624	55,061	4,144,685
		94	3,990,569	932	0	5	3,991,506	90,649	4,082,155
		88	5,022,185	1,229	0	16	5,023,430	12,586	5,036,016
3082	Unsupported Plastics Profile Shapes	96	156,782	0	0	142	156,924	21,317	178,241
		95	167,244	0	0	0	167,244	30,541	197,785
		94	429,897	0	0	0	429,897	39,819	469,716
		88	249,046	250	0	0	249,296	41,756	291,052
3083	Laminated Plastics Plate & Sheet	96	6,902,178	100	0	4,414	6,906,692	6,707	6,913,399
		95	6,538,683	878	0	0	6,539,561	12,496	6,552,057
		94	5,862,201	47	0	0	5,862,248	101,639	5,963,887
		88	3,476,023	6,022	0	0	3,482,045	41,673	3,523,718
3084	Plastics Pipe	96	168,265	0	0	0	168,265	0	168,265
		95	163,264	0	0	500	163,764	0	163,764
		94	142,769	0	0	186	142,955	10	142,965
		88	428,021	0	0	0	428,021	0	428,021

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-14. TRI On-site and Off-site Releases by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30, Continued

SIC Code	Industry	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases	Total On- and Off-site Releases Pounds
			Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds		Transfers Off-site to Disposal Pounds	
3085	Plastics Bottles	96	43	0	0	0	43	0	43
		95	40,538	0	0	0	40,538	0	40,538
		94	61,698	0	0	0	61,698	1	61,699
		88	No reports received						
3086	Plastics Foam Products	96	26,441,137	5	0	1,402	26,442,544	299,546	26,742,090
		95	29,167,192	34	0	12,300	29,179,526	189,001	29,368,527
		94	31,502,444	316	0	16,570	31,519,330	140,452	31,659,782
		88	12,629,819	250	0	20,530	12,650,599	141,903	12,792,502
3087	Custom Compound Purchased Resins	96	546,267	299	0	34,797	581,363	443,171	1,024,534
		95	657,336	334	0	0	657,670	594,140	1,251,810
		94	693,834	566	0	1,000	695,400	562,133	1,257,533
		88	631,258	291	4	0	631,553	484,355	1,115,908
3088	Plastics Plumbing Fixtures	96	7,937,848	0	0	5	7,937,853	29,880	7,967,733
		95	6,063,461	0	0	0	6,063,461	3,985	6,067,446
		94	6,047,988	0	0	0	6,047,988	1,960	6,049,948
		88	1,009,024	0	0	0	1,009,024	53,819	1,062,843
3089	Plastics Products, nec*	96	31,101,057	2,558	0	194,284	31,297,899	2,427,833	33,725,732
		95	31,460,169	1,066	0	59,645	31,520,880	2,393,548	33,914,428
		94	35,683,564	1,711	0	2,510	35,687,785	2,822,201	38,509,986
		88	27,377,729	3,682	0	16,250	27,397,661	1,105,345	28,503,006
	Multiple within SIC Code 30	96	5,131,332	1,800	0	25,355	5,158,487	1,171,750	6,330,237
		95	6,630,193	5,797	0	29,323	6,665,313	1,170,942	7,836,255
		94	7,111,753	4,131	0	17,019	7,132,903	879,070	8,011,973
		88	12,362,467	5,654	0	411	12,368,532	387,910	12,756,442
	Invalid SIC Code within SIC Code 30	96	1,016,765	2	0	0	1,016,767	33,827	1,050,594
		95	1,795,609	1,017	0	617	1,797,243	380,009	2,177,252
		94	2,313,869	950	0	530	2,315,349	553,102	2,868,451
		88	48,515,866	6,748	750	81,149	48,604,513	3,505,136	52,109,649
	Total for SIC Code 30	96	94,964,378	22,374	750	390,070	95,377,572	9,980,619	105,358,191
		95	103,465,289	20,830	0	221,298	103,707,417	11,057,941	114,765,358
		94	113,133,962	42,778	0	100,670	113,277,410	12,184,698	125,462,108
		88	146,353,851	30,931	754	157,087	146,542,623	11,771,176	158,313,799

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.

fabricated rubber products (SIC code 3069) was third with a 9.4 million-pound reduction, or 39.9%.

The largest increase over the 1994-1996 period was reported in the unsupported plastics film and sheet industry (SIC code 3081): 9.9 million pounds, or 40.4%. Recycling and treatment each accounted for roughly half of this increase. Makers of gaskets, packing, and sealing devices (SIC code 3053)

reported an increase of 1.8 million pounds, or 184.2%. The large majority of this increase occurred in recycling. No other industry in this sector had an increase of more than 200,000 pounds for 1994-1996.

On-site waste management data for 1994-1996 appear in Table 9-15.



Table 9-15. TRI Other On-site Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30

SIC Code	Industry	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
3011	Tires & Inner Tubes	96	1,707,402	144,000	109,376	1,960,778
		95	1,646,885	4,100	336,130	1,987,115
		94	1,621,487	0	141,804	1,763,291
		88	NA	NA	NA	NA
3021	Rubber & Plastics Footwear	96	9,482	0	0	9,482
		95	7,312	0	0	7,312
		94	45,982	0	0	45,982
		88	NA	NA	NA	NA
3052	Rubber & Plastics Hose & Belting	96	90,279,390	787,943	1,539,301	92,606,634
		95	245,208,725	1,015,326	1,354,889	247,578,940
		94	220,969,274	961,735	1,333,147	223,264,156
		88	NA	NA	NA	NA
3053	Gaskets, Packing & Sealing Devices	96	2,439,515	0	270,973	2,710,488
		95	860,529	0	253,582	1,114,111
		94	780,720	0	172,995	953,715
		88	NA	NA	NA	NA
3061	Mechanical Rubber Goods	96	39,272	0	18,627	57,899
		95	53,577	0	91,850	145,427
		94	30,763	0	19,216	49,979
		88	NA	NA	NA	NA
3069	Fabricated Rubber Products, nec*	96	9,888,481	1,702,203	2,628,716	14,219,400
		95	8,856,566	2,518,948	4,500,930	15,876,444
		94	14,238,234	2,082,377	7,330,923	23,651,534
		88	NA	NA	NA	NA
3081	Unsupported Plastics Film & Sheet	96	20,224,009	1,230,647	12,849,891	34,304,547
		95	14,347,977	1,803,702	9,443,727	25,595,406
		94	15,176,365	954,973	8,298,044	24,429,382
		88	NA	NA	NA	NA
3082	Unsupported Plastics Profile Shapes	96	105,992	0	76,641	182,633
		95	96,000	0	0	96,000
		94	102,000	0	43,360	145,360
		88	NA	NA	NA	NA
3083	Laminated Plastics Plate & Sheet	96	274,242	9,508,778	401,500	10,184,520
		95	74,411	10,859,976	566,604	11,500,991
		94	2,286,769	10,766,061	583,409	13,636,239
		88	NA	NA	NA	NA
3084	Plastics Pipe	96	0	0	162,488	162,488
		95	0	0	93,689	93,689
		94	0	0	166,934	166,934
		88	NA	NA	NA	NA
3085	Plastics Bottles	96	0	0	0	0
		95	0	0	0	0
		94	0	0	0	0
		88	No reports received			

Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

***nec:** not elsewhere classified.



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-15. TRI Other On-site Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30, Continued

SIC Code	Industry	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
3086	Plastics Foam Products	96	16,037,717	0	692,093	16,729,810
		95	15,042,171	3,792	168,471	15,214,434
		94	16,428,257	0	626,574	17,054,831
		88	NA	NA	NA	NA
3087	Custom Compound Purchased Resins	96	479,925	0	18,336	498,261
		95	288,966	0	34,525	323,491
		94	537,291	0	63,631	600,922
		88	NA	NA	NA	NA
3088	Plastics Plumbing Fixtures	96	0	0	9	9
		95	0	0	0	0
		94	0	0	2,880	2,880
		88	NA	NA	NA	NA
3089	Plastics Products, nec*	96	13,220,502	2,335,531	4,083,014	19,639,047
		95	17,106,755	1,976,312	4,197,626	23,280,693
		94	23,593,710	2,686,778	4,763,502	31,043,990
		88	NA	NA	NA	NA
	Multiple within SIC Code 30	96	5,293,327	150,024	4,961,919	10,405,270
		95	5,978,664	2,123,044	3,387,282	11,488,990
		94	6,093,975	2,996,441	2,383,742	11,474,158
		88	NA	NA	NA	NA
	Invalid SIC Code within SIC Code 30	96	60,258	175,977	209,576	445,811
		95	255,091	112,228	511,703	879,022
		94	427,440	86,508	534,802	1,048,750
		88	NA	NA	NA	NA
	Total for SIC Code 30	96	160,059,514	16,035,103	28,022,460	204,117,077
		95	309,823,629	20,417,428	24,941,008	355,182,065
		94	302,332,267	20,534,873	26,464,963	349,332,103
		88	NA	NA	NA	NA

Note: Data from Section 8 of Form R. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified

Transfers Off-site for Further Waste Management

Producers of unsupported plastics film and sheet (SIC code 3081) recorded the largest reduction in transfers off-site for further waste management since 1994 (data for some types of off-site transfers were not collected in 1988). This was a net decrease of 5.4 million pounds, or 68.3%, attributable to off-site recycling. (However, this industry also had the largest increase in other on-site waste management.)

Miscellaneous plastics products (SIC code 3089) reported a decrease of 3.7 million pounds (39.3%);

decreases in all off-site transfer types contributed to this figure. The industry with the third largest decrease, rubber and plastics hose and belting (SIC code 3052), had a reduction of 1.3 million pounds (45.9%), due almost entirely to a decrease in off-site recycling.

The largest increase was reported in the laminated plastics plate and sheet sector (SIC code 3083): 584,000 pounds, or 79.9%. Transfers to recycling and to energy recovery accounted for this figure. No other industry had an increase of more than 300,000 pounds from 1994-1996.



Table 9-16 provides data for transfers off-site for further waste management for the four-digit SIC codes in SIC code 30.

Facilities with Large Increases and Decreases in Releases, 1988-1996

Devro-Teepak, Inc., in Danville, Illinois (SIC code 3079 in 1988 and 3089 in 1996), ranked first in increase of releases with an overall increase of 1.8 million pounds. Carbon disulfide accounted for 100% of the increase because it was the only chemical this facility reported to TRI in 1988 and 1996. This facility manufactures cellophane tubing used for shaping food products such as hot dogs and sausages. Early in the tube-making process, carbon disulfide is reacted with wood pulp and the mixture is dissolved in dilute caustic. Later in the process, the carbon disulfide is stripped off of the tubing and much of it leaves the plant through point-source air emissions. A fire closed the plant in 1987. Consequently, carbon disulfide emissions were low in 1988 because production was low. The facility returned to full capacity before the 1996 reporting year.

The second-ranked facility was Texas Recreation Corporation in Wichita Falls, Texas (did not report in 1988, SIC code 3086 in 1996). Approximately half of this facility's 1.5 million-pound increase in releases was due to fugitive air emissions of methyl ethyl ketone (MEK). Texas Recreation manufactures foam leisure products. A coating process for this product line involves the use of MEK as a solvent. The Wichita Falls facility came into operation in 1988, and the product line in which MEK is used was not initiated until after the 1988 reporting year.

Third was Sequentia, Inc., in Grand Junction, Tennessee (SIC code 3089), with a 1.5 million-pound increase. The facility manufactures fiberglass-reinforced plastic panels. Scrap material is sent off-site to a landfill. The scrap material contains styrene, which is used in the production of

polyester resin. Styrene reporting accounts for 99% of the facility's increase. TRI reporting guidance materials such as the EPA document *Estimating Chemical Releases From Rubber Production and Compounding* (EPA 560/4-88-004q) were brought to the attention of Sequentia staff at a 1991 waste management seminar hosted by the University of Tennessee. The facility attributes the increase in reported releases to a better understanding of reporting requirements and improved estimation methods as a result of attending the seminar.

International Paper in Hampton, South Carolina (SIC 3079 in 1988 and 3083 in 1996), had the largest reduction in releases with a 3.0 million-pound decrease. A 2.6 million-pound reduction in methanol point-source air emissions accounted for 87% of the decrease. The facility's largest production line is decorative laminate. The facility has been engineering methanol out of the formulation of a resin used in laminate production. The reason for the reformulation, according to International Paper, is to reduce methanol emissions.

3M of Nevada, Missouri (SIC code 3081), was second in decreases with an overall release reduction of 2.5 million pounds. 3M uses xylene (mixed isomers) as a solvent in the manufacture of plastic adhesive film. Fugitive and point-source air emissions of xylene were reduced by a combined 1.3 million pounds after the facility installed two thermal oxidizers. Reduced xylene emissions account for over 50% of this facility's overall decrease in releases between the comparison years.

Goodyear Tire & Rubber Company in Lincoln, Nebraska (SIC code 3041 in 1988 and 3052 in 1996), was third in decreases with an overall reduction of 2.3 million pounds. Reduction in toluene point-source air emissions was the primary reason for the change. A material substitution was made for toluene, a processing aid in the manufacture of belts and hoses for industrial applications and automobiles.



Chapter 9 — TRI Data for Rubber and Plastics Products

Table 9-16. TRI Transfers Off-site for Further Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30

SIC Code	Industry	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
3011	Tires & Inner Tubes	96	1,216,761	63,839	167,252	37,205	0	1,485,057
		95	1,240,574	11,986	244,277	18,532	500	1,515,869
		94	1,158,886	11,137	201,264	19,317	250	1,390,854
		88	NA	NA	194,739	13,310	600	NA
3021	Rubber & Plastics Footwear	96	25,107	19,860	0	0	0	44,967
		95	16,117	64,390	3,613	0	0	84,120
		94	17,816	136,205	3,011	0	0	157,032
		88	NA	NA	23,894	0	0	NA
3052	Rubber & Plastics Hose & Belting	96	1,248,573	227,970	23,831	11,944	0	1,512,318
		95	1,676,681	210,051	58,947	18,841	0	1,964,520
		94	2,536,317	203,813	34,369	19,484	0	2,793,983
		88	NA	NA	60,252	41,185	42,008	NA
3053	Gaskets, Packing & Sealing Devices	96	154,946	396,149	159,835	1,544	0	712,474
		95	178,222	457,857	89,432	1,195	0	726,706
		94	711,683	483,293	49,659	143,483	0	1,388,118
		88	NA	NA	153,965	6,470	0	NA
3061	Mechanical Rubber Goods	96	82,172	41,495	19,510	8,297	19,456	170,930
		95	104,958	68,874	26,146	6,000	250	206,228
		94	108,310	58,257	25,458	3,247	0	195,272
		88	NA	NA	50,751	253	0	NA
3069	Fabricated Rubber Products, nec*	96	654,661	798,807	304,889	35,657	4,541	1,798,555
		95	517,884	957,216	266,977	70,497	0	1,812,574
		94	526,360	1,139,487	245,663	152,583	0	2,064,093
		88	NA	NA	1,420,284	240,942	19,723	NA
3081	Unsupported Plastics Film & Sheet	96	667,460	1,128,972	668,005	52,741	328	2,517,506
		95	6,381,041	738,275	668,583	45,914	0	7,833,813
		94	6,476,366	709,421	634,162	117,399	0	7,937,348
		88	NA	NA	430,027	10,221	0	NA
3082	Unsupported Plastics Profile Shapes	96	196,056	3,957	21,106	250	0	221,369
		95	0	3,584	10,900	53	0	14,537
		94	0	71,404	10,010	15	0	81,429
		88	NA	NA	9,772	250	0	NA
3083	Laminated Plastics Plate & Sheet	96	398,201	674,186	242,441	0	0	1,314,828
		95	308,420	338,683	142,408	22,802	10,010	822,323
		94	38,449	437,588	253,008	1,660	0	730,705
		88	NA	NA	158,752	21,712	348	NA
3084	Plastics Pipe	96	18,602	9,742	0	0	0	28,344
		95	23,310	9,411	11,480	0	0	44,201
		94	42,051	8,018	2,796	0	0	52,865
		88	NA	NA	0	0	0	NA
3085	Plastics Bottles	96	0	0	0	0	0	0
		95	0	0	0	0	0	0
		94	0	1,797	0	0	0	1,797
		88	No reports received					

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

* **nec:** not elsewhere classified.



Table 9-16. TRI Transfers Off-site for Further Waste Management by 4-digit SIC Code, 1988 and 1994-1996: Rubber and Plastics Products, SIC Code 30, Continued

SIC Code	Industry	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
3086	Plastics Foam Products	96	653,239	151,161	305,714	5,957	0	1,116,071
		95	559,708	168,181	155,574	279	0	883,742
		94	617,478	81,175	131,902	316	0	830,871
		88	NA	NA	218,503	5	3,500	NA
3087	Custom Compound Purchased Resins	96	87,106	82,399	40,454	78,571	0	288,530
		95	82,565	55,015	74,828	60,790	0	273,198
		94	801,329	75,849	43,722	54,528	0	975,428
		88	NA	NA	74,194	53,128	38,039	NA
3088	Plastics Plumbing Fixtures	96	16,806	4,265	8,534	764	0	30,369
		95	35,362	8,804	2,696	5	750	47,617
		94	22,933	11,103	14,699	5	0	48,740
		88	NA	NA	29,726	0	0	NA
3089	Plastics Products, nec*	96	3,130,826	1,971,271	392,120	281,292	250	5,775,759
		95	5,084,815	2,780,599	304,777	445,765	0	8,615,956
		94	5,156,475	3,185,434	692,522	475,160	1,378	9,510,969
		88	NA	NA	802,439	379,224	82,477	NA
	Multiple within SIC Code 30	96	2,672,708	722,469	409,140	28,694	0	3,833,011
		95	2,526,569	1,075,967	646,667	13,255	0	4,262,458
		94	2,513,984	930,746	793,249	19,351	0	4,257,330
		88	NA	NA	1,469,877	64,440	64,113	NA
	Invalid SIC Code within SIC Code 30	96	184,039	120,644	1,114	750	0	306,547
		95	284,843	313,559	29,884	4,771	0	633,057
		94	197,053	578,164	37,279	7,959	0	820,455
		88	NA	NA	4,090,949	489,393	143,071	NA
	Total for SIC Code 30	96	11,407,263	6,417,186	2,763,945	543,666	24,575	21,156,635
		95	19,021,069	7,262,452	2,737,189	708,699	11,510	29,740,919
		94	20,925,490	8,122,891	3,172,773	1,014,507	1,628	33,237,289
		88	NA	NA	9,188,124	1,320,533	393,879	NA

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code. Forms with more than one 4-digit SIC code within SIC code 30 are assigned to the "multiple" category.

*nec: not elsewhere classified.

Goodyear attributes its toluene reduction to participation in EPA's 33/50 Program.

Other Apparent Increases and Decreases in Releases, 1988-1996

In the TRI database, there are other facilities with large apparent increases and decreases, which have been identified as reporting errors or plant closures.

Because these are errors or plant closures and not actual changes in the data, these facilities are not discussed in detail here. There is one such facility in the rubber and plastics products sector:

Pioneer Plastics Corporation, Wisconsin Rapids, Wisconsin, decrease of 2.6 million pounds, plant closure.



1991-1996 Waste Management Data for Rubber and Plastics Products

Table 9-17 summarizes on- and off-site waste management data for the rubber and plastics products sector for 1991, when TRI began collecting this information, and the three most recent years (1994-1996). Total production-related waste decreased 26.0% from 1991-1996, with an even larger percentage decrease (32.0%) from 1995-1996. As noted, one facility accounted for much of this change. Since 1991, total production-related waste decreased 118.8 million pounds. This represents the net reduction for the period, despite an increase in the early years. Without the one facility that has substantially reduced its on-site recycling, the sector's waste management data would still show a decrease (31.1 million pounds) from 1991 to 1996. This net reduction has been accomplished despite increases in production throughout those years.

From 1991 to 1996, two areas showed increases. On-site treatment rose from 16.8 million pounds in 1991 to 28.0 million pounds in 1996, a 66.5% increase. Off-site recycling was 14.0 million pounds in 1991 and 19.5 million pounds in 1996, a 39.6% increase. Total off-site waste management increased 3.8 million pounds, from 26.3 million pounds to 30.1 million pounds (a 14.6% increase) for 1991-1996, driven by the 5.5 million-pound increase in off-site recycling.

The quantity released on- and off-site decreased 39.5 million pounds (27.4%), from 144.2 million pounds in 1991 to 104.7 million pounds in 1996.

Figure 9-13 illustrates the percentage changes in on-site and off-site waste management types.

These data present a somewhat mixed picture in relation to the waste management hierarchy (explained in Chapter 1). As noted, one facility reported large quantities of on-site recycling as well as a large reduction in those quantities from 1991 to 1996. For the rest of the sector, on-site recycling

quantities (excluding data from that one facility) fluctuated from year to year. Off-site recycling increased over the 1991-1996 period. Taken together, the quantities for on-site recycling and off-site recycling show that the sector's use of recycling to manage production-related waste varied from year to year. Under the waste management hierarchy, recycling is the preferred option for TRI chemicals in waste that cannot be prevented. At the same time, although the quantities released showed decreases, on-site treatment rose. In terms of the hierarchy, treatment is the least preferable option except for release or disposal of the waste quantities. Thus, there is no evident trend in this sector toward the environmentally preferable waste management options.

Facilities with Large Increases and Decreases in Waste Management, 1991-1996

Component Technologies, Inc., in Palmetto, Florida (did not report in 1991, SIC code 3081 in 1996), had the biggest increase in production-related waste. All of this facility's increase was accounted for by on-site recycling of methyl ethyl ketone (MEK). For this chemical, 9.6 million pounds were reported as recycled on-site in 1996, and there were no data reported in 1991. The facility did not begin operation until 1992. The facility uses methyl ethyl ketone as a solvent in audio cassette tape coating operations. One of the coatings produced is a polyester-based film used to line the inside of the tape housing. The other coating is applied to leader tape. MEK recovered from the coating operations is recycled and reused.

Toray Plastics America, Inc., in North Kingstown, Rhode Island (SIC code 3081), ranked second with an overall increase of 5.3 million pounds. The facility had a 5.0 million-pound increase in the amount of ethylene glycol reported as recycled off-site. Ethylene glycol is the by-product of a process for making a polyester resin. The resin is used in the manufacture of film for the video industry. This facility went into production in 1990 and did not



Table 9-17. TRI Waste Management Data, 1991, 1994-1996: Rubber and Plastics Products, SIC Code 30

Waste Management Activity	1991 Pounds	1994 Pounds	1995 Pounds	1996 Pounds
<u>On-site Waste Management</u>				
Recycled On-site	251,766,231	302,339,767	309,831,983	160,065,614
Energy Recovery On-site	18,651,762	20,534,873	20,417,428	16,035,103
Treated On-site	16,831,797	26,464,963	24,941,008	28,022,520
Total On-site Waste Management	287,249,790	349,339,603	355,190,419	204,123,237
<u>Off-site Waste Management</u>				
Recycled Off-site	13,952,872	20,881,773	18,621,438	19,472,557
Energy Recovery Off-site	8,511,402	8,186,142	7,314,903	7,314,920
Treated Off-site	3,786,766	4,143,715	3,734,712	3,303,301
Total Off-site Waste Management	26,251,040	33,211,630	29,671,053	30,090,778
Quantity Released On- and Off-site	144,161,844	129,408,647	113,504,064	104,655,240
Total Production-related Waste	457,662,674	511,959,880	498,365,536	338,869,255
Non-Production-related Waste	337,557	441,514	328,849	90,906
Waste Management Activity	Change 1994-1995 Percent	Change 1995-1996 Percent	Change 1991-1996 Percent	
<u>On-site Waste Management</u>				
Recycled On-site	2.5	-48.3	-36.4	
Energy Recovery On-site	-0.6	-21.5	-14.0	
Treated On-site	-5.8	12.4	66.5	
Total On-site Waste Management	1.7	-42.5	-28.9	
<u>Off-site Waste Management</u>				
Recycled Off-site	-10.8	4.6	39.6	
Energy Recovery Off-site	-10.6	0.0	-14.1	
Treated Off-site	-9.9	-11.6	-12.8	
Total Off-site Waste Management	-10.7	1.4	14.6	
Quantity Released On- and Off-site	-12.3	-7.8	-27.4	
Total Production-related Waste	-2.7	-32.0	-26.0	
Non-Production-related Waste	-25.5	-72.4	-73.1	

Note: Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R (Current Year, Column B) of year indicated.

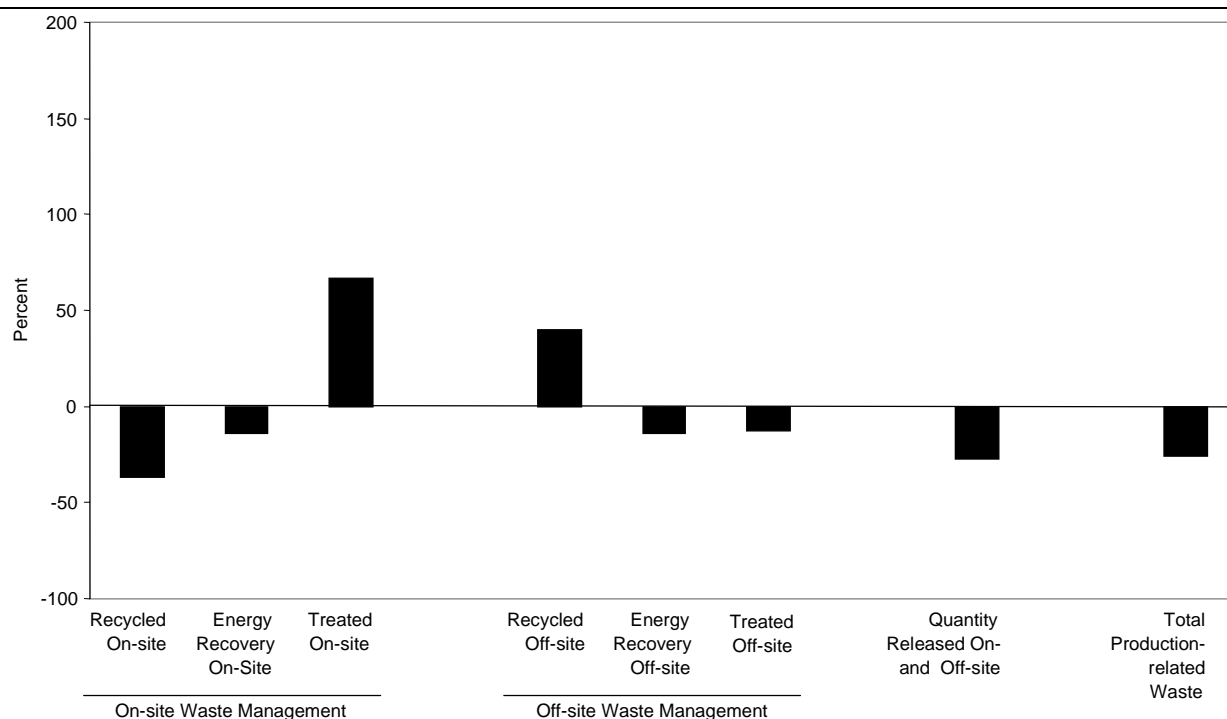


Figure 9-13. Percentage Change in Quantities of TRI Chemicals in Waste, 1991-1996: Rubber and Plastics Products (SIC Code 30)

Note: Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R (Current Year, Column B) of year indicated.

reach production capacity until 1991. Between 1991 and 1995, the facility doubled in size. Increased efficiency in ethylene glycol recovery and production capacity are cited by Toray Plastics as the reasons for the change in reporting.

Ranked third is Wilsonart International in Temple, Texas (SIC code 3083), with an increase of 4.8 million pounds. Over 90% of the increase is accounted for by methanol reported as on-site energy recovery. Wilsonart produces laminated plastic countertop and flooring. Methanol is used as a solvent in the laminate production process. It is recovered from paper impregnated with phenolic resin before the material goes through a heated pressing cycle. The recovered methanol is then used as a fuel in boilers that generate steam for the pressing cycle. The facility attributes the increase to two factors: a significant production increase and a change in estimation methods. Methanol data were

formerly calculated by engineering estimates. Now they are based on empirical data.

First in decreases was Gates Rubber Company in Iola, Kansas (SIC code 3052), with an overall reduction of 87.7 million pounds. This plant, which manufactures hydraulic hose, used lead molds to form the hose. After the forming process, the lead mold was stripped off of the hose, recycled on-site, and reused in the same process. Replacing the lead molds with plastic molds resulted in an 87.7 million-pound reduction in reported on-site recycling for 1991-1996. This facility's on-site recycling of lead compounds actually increased from 1991 to 1995, reaching a peak of 243.7 million pounds. However, a reduction of 154.5 million pounds occurred in the last year. The changeover began in 1995 and was completed in 1997. The facility estimates that there will be no on-site recycling of lead compounds by 1998.



Flexel, Inc., in Tecumseh, Kansas (SIC code 3089), ranked second in decreases with an overall reduction of 13.2 million pounds. Over 60% of the reduction was due to a decrease in the amount of carbon disulfide reported as recycled on-site. The facility changed ownership since the 1996 reporting year and is now called UCB. Carbon disulfide is used as a reactant in the manufacture of cellophane packaging film. Regenerated carbon disulfide is partially recoverable and this is recycled and reused in the process. A 7.2 million-pound decrease in on-recycling of carbon disulfide was the result of a change in the interpretation of how to report carbon disulfide in this category, according to the facility contact.¹

Wilsonart International in Fletcher, North Carolina (SIC code 3083), ranked third in decreases with a total change of 3.9 million pounds. The plant produces the same product lines as the Wilsonart facility in Temple, Texas (ranked third for increases in production-related waste). The two plants have very similar operations, according to the contact. The Fletcher facility reported a 3.8 million-pound reduction in on-site energy recovery of methanol, accounting for 99% of the overall decrease. The change is due to improved estimation methods. Like the Temple facility, TRI reporting at the Fletcher plant is now based on empirical data rather than engineering estimates.

Other Apparent Increases and Decreases in Production-Related Waste, 1991-1996

In the TRI database, there are other facilities with large apparent increases and decreases, which have been identified as reporting errors or plant closures. Because these are errors or plant closures and not actual changes in the data, these facilities are not

discussed in detail here. There are two such facilities in the rubber and plastics products sector:

Huntsman Packaging Corporation, Merced, California, decrease of 5.3 million pounds, reporting error.

Spaulding Composites Company, Inc., Tonawanda, New York, decrease of 5.5 million pounds, plant closure.

Facilities Contacted for Explanations (alphabetical by facility):

3M, Nevada, Missouri: Roy E. Fletchall, July 22, 1998 (explanation provided)

Component Technologies, Inc., Palmetto, Florida: Susan Shively, July 22, 1998 (explanation provided)

Devro-Teepak, Inc., Danville, Illinois: John R. Ramsey, July 22, 1998 (explanation provided)

Flexel, Inc., Tecumseh, Kansas: Richard J. Kieffer, July 31, 1998 (explanation provided)

Gates Rubber Company, Iola, Kansas: Don Jones, July 22, 1998 (explanation provided)

Goodyear Tire & Rubber Company, Lincoln, Nebraska: Michael L. Hedberg, August 5, 1998 (explanation provided)

Huntsman Packaging Corporation, Merced, California: Bill Fitzwater, July 30, 1998 (explanation provided)

International Paper, Hampton, South Carolina: David L. Clampitt, August 3, 1998 (explanation provided)

Pioneer Plastics Corp., Wisconsin Rapids, Wisconsin, Paul Fazio (Auburn, Maine), July 22, 1998 (explanation provided)

¹ There are no TRI regulatory definitions of recycling. Facilities may use their own interpretations for purposes of reporting to TRI. Changes in these interpretations do not represent a change in guidance by EPA on how to report recycling.



Chapter 9 — TRI Data for Rubber and Plastics Products

Sequentia, Inc., Grand Junction, Tennessee:
John Smith, July 22 and 28, 1998 (explanation
provided)

Spaulding Composites Company, Inc.,
Tonawanda, New York: Ronald Juhre, July 22,
1998 (explanation provided)

Texas Recreation Corp., Wichita Falls, Texas:
Don Badgwell, July 29, 1998 (explanation
provided)

Toray Plastics America, Inc., North Kingstown,
Rhode Island: Bronwyn Boyle, July 22, 1998
(explanation provided)

Wilsonart International, Temple, Texas, and
Fletcher, North Carolina: Paul Maxwell, July 28
and August 11, 1998 (explanation provided)

